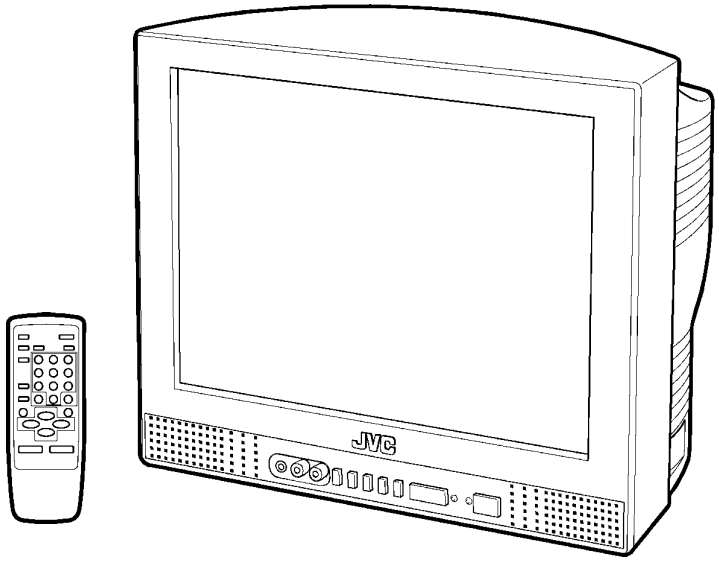
JVC

SERVICE MANUAL

COLOUR TELEVISION

BASIC CHASSIS
CG

AV-21E3



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No. 52028
Jul. 2002

SPECIFICATIONS

ITEM		CONTENT
Dimensions(W×H×D)		497mm×454mm×478.5mm
Mass		21kg
TV RF System		B/G, I, D/K,
Colour System	RF Mode	PAL / SECAM
	VIDEO Mode	PAL / SECAM / NTSC3.58 / NTSC4.43
Picture Tube		Visible size: 51cm measured diagonally
High Voltage		26.5kV±1.5kV(at zero beam current)
Receiving Frequency	VHF (VL)	46.25MHz～168.25MHz
	VHF (VH)	175.25MHz～463.25MHz
	UHF	471.25MHz～863.25MHz
	CATV	Cable TVs of Mid (X-Z, S1-S10) Super (S11-S20) & Hyper (S21-S41) bands receivable
Intermediate Frequency	VIF Carrier	38.0MHz
	SIF Carrier	32.5MHz(5.5MHz) 31.5MHz (6.5MHz) 32.0MHz (6.0MHz)
Colour Sub Carrier Frequency		PAL (4.43MHz), SECAM (4.40625MHz / 4.25MHz) NTSC (3.58MHz / 4.43MHz)
Power Input	Rated Voltage	AC110～240V, 50 / 60Hz
Power Consumption		90W (Max) / 60W(Avg)
Speaker		5cm×9cm, Oval type×1
Audio Output		3W (monaural)
Aerial Input Terminal		75Ω Unbalanced
Input	Video	1V(p-p), 75Ω (Front / Rear)
	Audio	500mV(rms) (-4dBs), High impedance, RCA×2 (Front / Rear)
Output	Video	1V(p-p), 75Ω
	Audio	500mV(rms) (-4dBs), Low impedance,
Headphone jack		3.5mm mini jack
Remote Control Unit		RM-C364GY (Battery size : AA / R06 / UM-3×2)

Design and specifications are subject to change without notice.

SAFETY PRECAUTIONS

1. The design of this product contains special hardware, many circuits and components specially for safety purposes. For continued protection, no changes should be made to the original design unless authorized in writing by the manufacturer. Replacement parts must be identical to those used in the original circuits. Service should be performed by qualified personnel only.

2. Alterations of the design or circuitry of the products should not be made. Any design alterations or additions will void the manufacturer's warranty and will further relieve the manufacturer of responsibility for personal injury or property damage resulting therefrom.

3. Many electrical and mechanical parts in the products have special safety-related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in the parts list of Service manual. **Electrical components having such features are identified by shading on the schematics and by (⚠) on the parts list in Service manual.** The use of a substitute replacement which does not have the same safety characteristics as the recommended replacement part shown in the parts list of Service manual may cause shock, fire, or other hazards.

4. **Don't short between the LIVE side ground and ISOLATED (NEUTRAL) side ground or EARTH side ground when repairing.**
   Some model's power circuit is partly different in the GND. The difference of the GND is shown by the LIVE : (⊥) side GND, the ISOLATED(NEUTRAL) : (⏥) side GND and EARTH : (⏚) side GND. Don't short between the LIVE side GND and ISOLATED(NEUTRAL) side GND or EARTH side GND and never measure with a measuring apparatus (oscilloscope etc.) the LIVE side GND and ISOLATED(NEUTRAL) side GND or EARTH side GND at the same time.
   If above note will not be kept, a fuse or any parts will be broken.

5. If any repair has been made to the chassis, it is recommended that the B1 setting should be checked or adjusted (See ADJUSTMENT OF B1 POWER SUPPLY).

6. The high voltage applied to the picture tube must conform with that specified in Service manual. Excessive high voltage can cause an increase in X-Ray emission, arcing and possible component damage, therefore operation under excessive high voltage conditions should be kept to a minimum, or should be prevented. If severe arcing occurs, remove the AC power immediately and determine the cause by visual inspection (incorrect installation, cracked or melted high voltage harness, poor soldering, etc.). To maintain the proper minimum level of soft X-Ray emission, components in the high voltage circuitry including the picture tube must be the exact replacements or alternatives approved by the manufacturer of the complete product.

7. Do not check high voltage by drawing an arc. Use a high voltage meter or a high voltage probe with a VTVM. Discharge the picture tube before attempting meter connection, by connecting a clip lead to the ground frame and connecting the other end of the lead through a 10kΩ 2W resistor to the anode button.

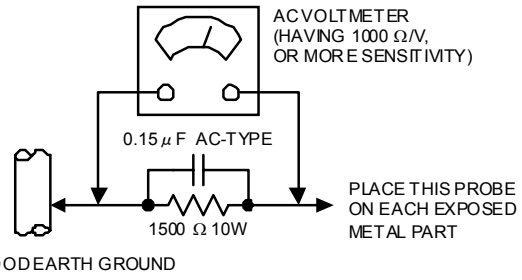
8. When service is required, observe the original lead dress. Extra precaution should be given to assure correct lead dress in the high voltage circuit area. Where a short circuit has occurred, those components that indicate evidence of overheating should be replaced. Always use the manufacturer's replacement components.

9. **Isolation Check**
   (Safety for Electrical Shock Hazard)
   After re-assembling the product, always perform an isolation check on the exposed metal parts of the cabinet (antenna terminals, video/audio input and output terminals, Control knobs, metal cabinet, screwheads, earphone jack, control shafts, etc.) to be sure the product is safe to operate without danger of electrical shock.

(1) **Dielectric Strength Test**
The isolation between the AC primary circuit and all metal parts exposed to the user, particularly any exposed metal part having a return path to the chassis should withstand a voltage of 3000V AC (r.m.s.) for a period of one second.
(. . . . Withstand a voltage of 1100V AC (r.m.s.) to an appliance rated up to 120V, and 3000V AC (r.m.s.) to an appliance rated 200V or more, for a period of one second.)
This method of test requires a test equipment not generally found in the service trade.

(2) **Leakage Current Check**
Plug the AC line cord directly into the AC outlet (do not use a line isolation transformer during this check.). Using a "Leakage Current Tester", measure the leakage current from each exposed metal part of the cabinet, particularly any exposed metal part having a return path to the chassis, to a known good earth ground (water pipe, etc.). Any leakage current must not exceed 0.5mA AC (r.m.s.).
However, in tropical area, this must not exceed 0.2mA AC (r.m.s.).

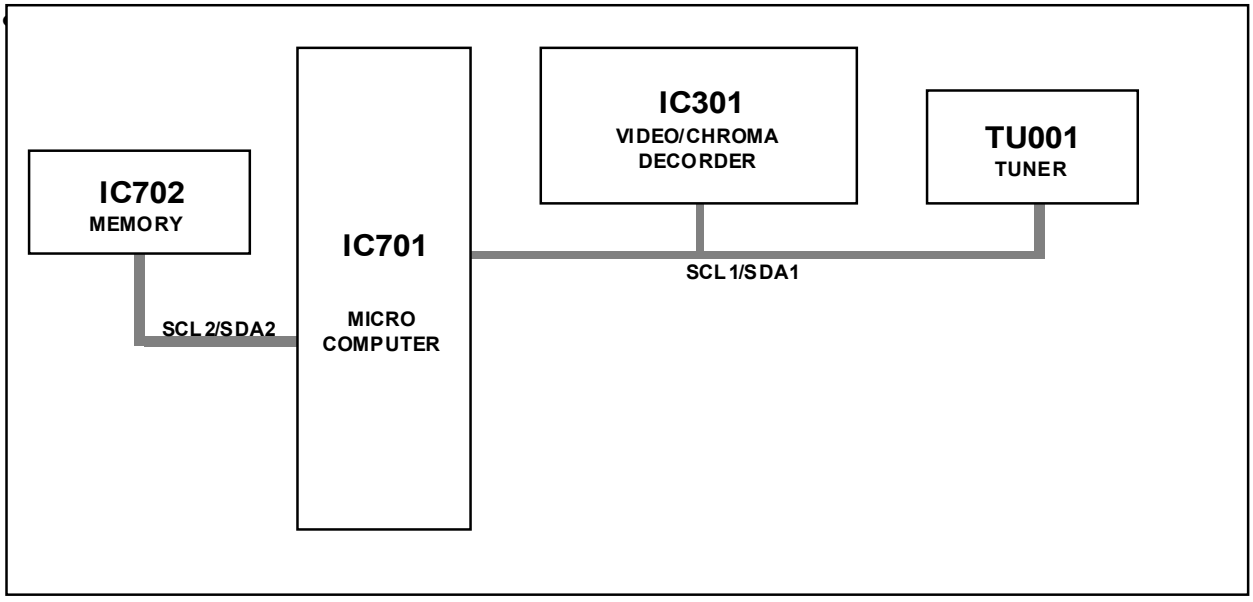
● **Alternate Check Method**
Plug the AC line cord directly into the AC outlet (do not use a line isolation transformer during this check.). Use an AC voltmeter having 1000 ohms per volt or more sensitivity in the following manner. Connect a 1500Ω 10W resistor paralleled by a 0.15μF AC-type capacitor between an exposed metal part and a known good earth ground (water pipe, etc.). Measure the AC voltage across the resistor with the AC voltmeter. Move the resistor connection to each exposed metal part, particularly any exposed metal part having a return path to the chassis, and measure the AC voltage across the resistor. Now, reverse the plug in the AC outlet and repeat each measurement. Any voltage measured must not exceed 0.75V AC (r.m.s.). This corresponds to 0.5mA AC (r.m.s.).
However, in tropical area, this must not exceed 0.3V AC (r.m.s.). This corresponds to 0.2mA AC (r.m.s.).



FEATURES

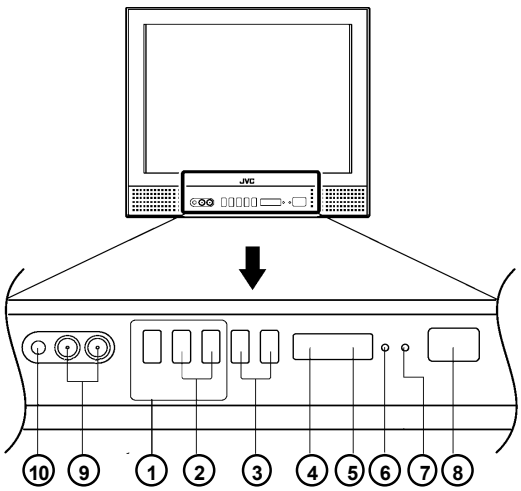
- New chassis design enables use of an interactive on-screen control.
- Wide range voltage (110V～240V) AC power input.
- With AUDIO / VIDEO INPUT & OUTPUT terminal.
- MUTING button can reduce the audio level to zero instantly.
- Functional remote control to operate TV set (for channel select, volume control, power ON/OFF, etc.) from a distance.
- I^2C bus control utilizes single chip ICs for IF, V/C, DEF. VSM PRESET, PRESET & SETUP TOUR.
- By means of AUTO PROGRAM, the TV stations can be selected automatically and the TV channels can also be rearranged automatically.
- Built-in ECO MODE (ECONOMY, ECOLOGY)
  In accordance with the brightness in a room, the brightness and / of contrast of the picture can be adjusted automatically to make the optimum picture which is easy on the eye.
- Built – in ON TIMER, RETURN + & CHILD LOCK.

SYSTEM BLOCK DIAGRAM



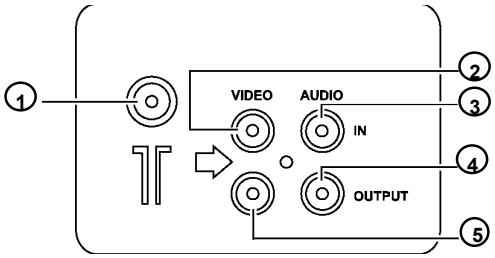
FUNCTIONS

■ FRONT PANEL



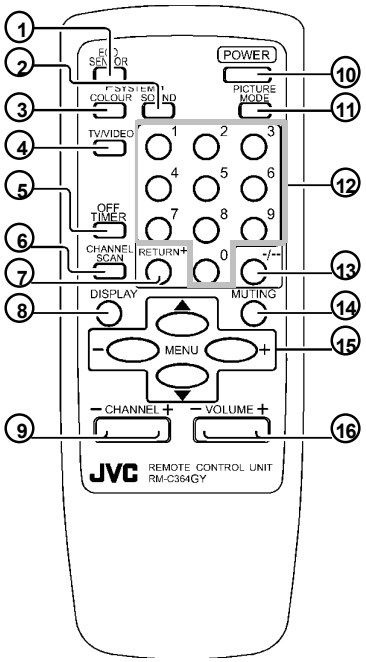
①	MENU buttons
②	CHANNEL −/+ buttons
③	VOLUME −/+ buttons
④	AI ECO sensor
⑤	REMOTE CONTROL sensor
⑥	ON TIMER lamp
⑦	POWER lamp
⑧	MAIN POWER button
⑨	A/V INPUT terminal
⑩	HEADPHONE jack

■ REAR TERMINAL



①	ANT Terminal
②	VIDEO INPUT Terminal
③	AUDIO INPUT Terminal
④	AUDIO OUTPUT Terminal
⑤	VIDEO OUTPUT Terminal

■ REMOTE CONTROL UNIT



①	ECO SENSOR key
②	SOUND SYSTEM key
③	COLOUR SYSTEM key
④	TV/VIDEO key
⑤	OFF TIMER key
⑥	CHANNEL SCAN key
⑦	RETURN+key
⑧	DISPLAY key
⑨	CHANNEL key
⑩	POWER key
⑪	PICTURE MODE key
⑫	Number (CH.) key
⑬	−/−− key
⑭	MUTING key
⑮	MENU key MENU ▲/▼ key MENU −/+ key
⑯	VOLUME−/+ key

SPECIFIC SERVICE INSTRUCTIONS

DISASSEMBLY PROCEDURE

REMOVING THE REAR COVER

1. Unplug the power plug.
2. As shown in figure, remove the **5** screws marked Ⓐ and a screw marked Ⓑ and a screw marked Ⓒ .
3. Remove the back board and remove the power cord from the rear cover.
4. Withdraw the rear cover toward you.

REMOVING THE MAIN PW BOARD

- After removing the rear cover.

1. Slightly raise the both sides of the MAIN PW Board by hand and remove the PWB stopper of MAIN PW Board.
2. Withdraw the MAIN PW Board backward.
   (If necessary, take off the wire clamp, connectors etc.)

REMOVING THE SPEAKER

- After removing the rear cover.

1. As shown in figure, remove the **2** screws marked Ⓓ .

CHECKING THE MAIN PW BOARD

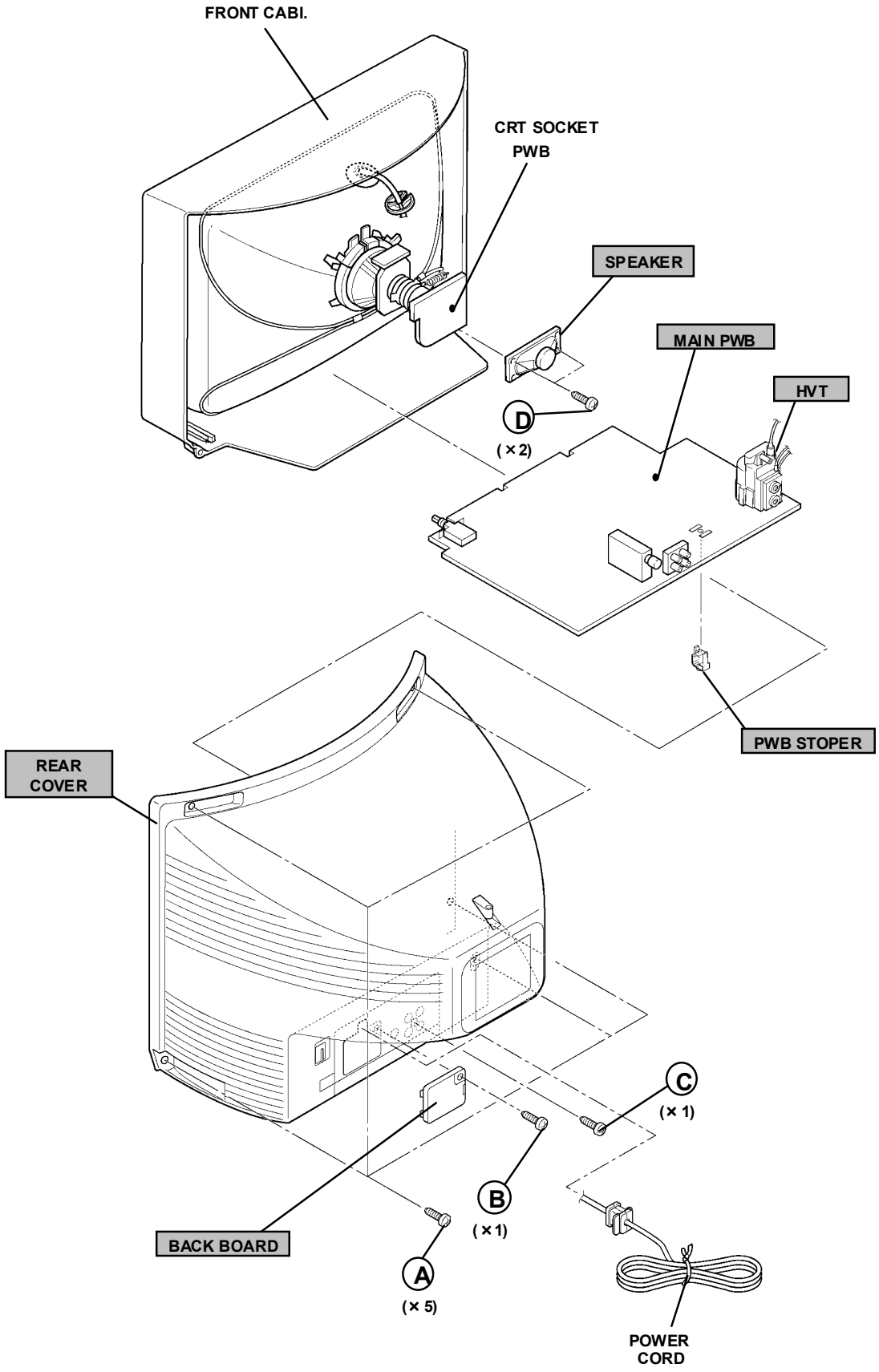
1. To check the back side of the PW Board.
   1) Pull out the MAIN PW Board. (Refer to REMOVING THE MAIN PW Board)
   2) Erect the PW Board vertically so that you can easily check the back side of the PW Board.

[CAUTION]

- When erecting the PW Board, be careful so that there will be no contacting with other PW Board.
- Before turning on power, make sure that the CRT earth wire and other connector are properly connected.

WIRE CLAMPING AND CABLE TYING

1. Be sure to clamp the wire.
2. Never remove the cable tie used for tying the wires together.
   Should it be inadvertently removed, be sure to tie the wires with a new cable tie.


FRONT CABI.
CRT SOCKET PWB
SPEAKER
MAIN PWB
HVT
D
(× 2)
PWB STOPER
REAR COVER
C
(× 1)
B
(× 1)
BACK BOARD
A
(× 5)
POWER CORD

REPLACEMENT OF MEMORY ICs

1. MEMORY ICs

This model uses memory ICs. This memory IC data are for proper operation of the video and deflection circuits.
When replacing memory ICs, be sure to use ICs written with the initial values of data.

2. PROCEDURE FOR REPLACING MEMORY ICs

(1) Power off

Switch the power off and disconnect the power plug from the wall outlet.

(2) Replace ICs

Be sure to use memory ICs written with the initial data values.

(3) Power on

Connect the power plug into the wall outlet and switch the power on.

(4) Check and set SYSTEM CONSTANT SET

• It must not adjust without adjustment signals.

1) Press the **DISPLAY** key and the **PICTURE MODE** key of the REMOTE CONTROL UNIT simultaneously.
2) The SERVICE MENU screen of Fig. 1 will be displayed.
3) While the SERVICE MENU is displayed, again press the **DISPLAY** key and **PICTURE MODE** key simultaneously, and the SYSTEM CONSTANT SET screen of Fig. 2 will be displayed.
4) Check the setting values of the SYSTEM CONSTANT SET of Table 1 If the value is different, select the setting item with the **MENU** ▼/▲key, and set the correct value with the **MENU** - / + key.
5) Press the **DISPLAY** key twice, and return to the normal screen.

(5) Receive channel of setting

Refer to the **OPERATING INSTRUCTIONS** and set the receive channels (channels preset) as described

(6) User Setting

Check the user setting value of Table 2, and if setting value is different, set the correct value.
For setting, refer to the **OPERATING INSTRUCTIONS**.

(7) Setting of SERVICE MENU

Verify the setting items of the SERVICE MENU, and reset where necessary.
For setting, refer to the **SERVICE ADJUSTMENTS**.

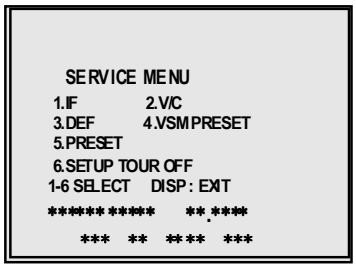


Fig.1

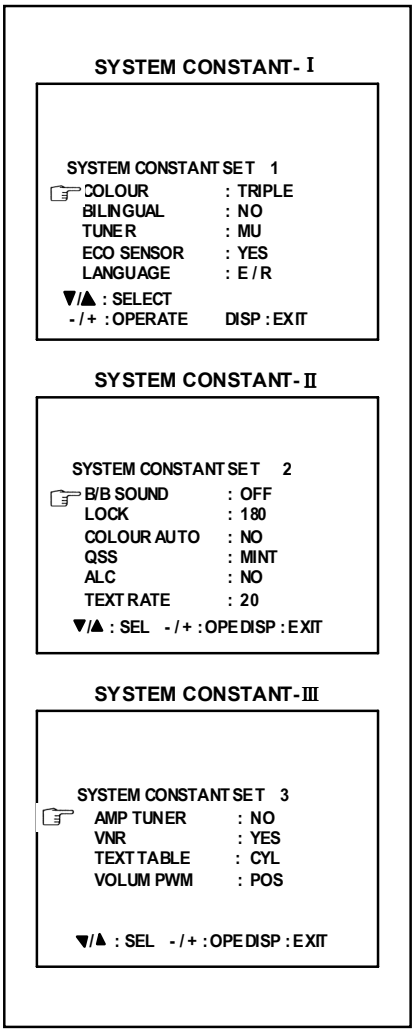
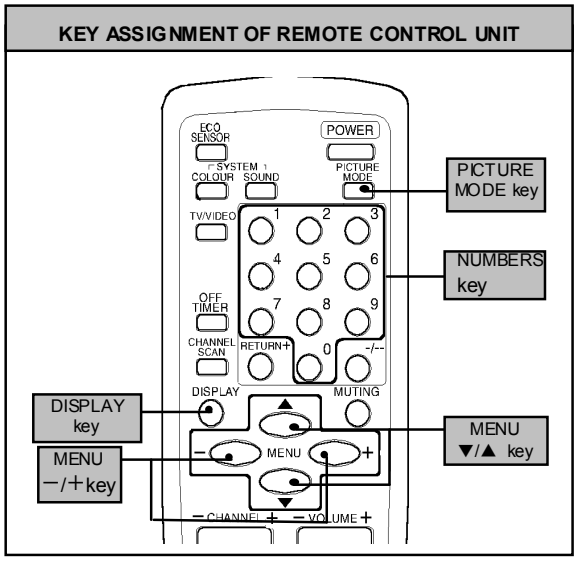

SYSTEM CONSTANT- I
SYSTEM CONSTANT SET 1
COLOUR : TRIPLE
BILINGUAL : NO
TUNER : MU
ECO SENSOR : YES
LANGUAGE : E / R
▼/▲ : SELECT
- / + : OPERATE DISP : EXIT
SYSTEM CONSTANT- II
SYSTEM CONSTANT SET 2
B/B SOUND : OFF
LOCK : 180
COLOUR AUTO : NO
QSS : MINT
ALC : NO
TEXT RATE : 20
▼/▲ : SEL - / + : OPE DISP : EXIT
SYSTEM CONSTANT- III
SYSTEM CONSTANT SET 3
AMP TUNER : NO
VNR : YES
TEXT TABLE : CYL
VOLUM PWM : POS
▼/▲ : SEL - / + : OPE DISP : EXIT

Fig.2



SETTING OF SYSTEM CONSTANT SET

Setting item	Setting contents	Setting value
COLOUR	MULTI. → TRIPLE → PAL	TRIPLE
BILINGUAL	YES → NO	NO
TUNER	MU → MA	MU
AI ECO SENSOR	YES → NO	YES
LANGUAGE	E/R/A/P → E/R	E / R
B/B SOUND	ON → OFF	OFF
LOCK	YES ↔ 10 ↔ 20 ↔ ～ ↔ 230 ↔ 240 ↔ 250	180
COLOUR AUTO	YES → NO	NO
QSS	MINT → MQSS	MINT
ALC	YES → NO	NO
TEXT RATE	10 ↔ 20 ↔ 40 ↔ 80	20
AMP TUNER	YES → NO	NO
VNR	YES → NO	YES
TEXT TABLE	ARA → CYL	CYL
VOLUM PWM	POS → NEG	POS

Table 1

USER SETTING VALUES

Setting item	Setting value	Setting item	Setting value
SUB POWER	ON	LANGUAGE	ENGLISH
CHANNEL POSITION	1 POSITION	CHANNEL PRESET	Refer to OPERATING INSTRUCTION
VOLUME	About 10	AI ECO SENSOR	OFF
TV/VIDEO	TV	VNR	OFF
ON SCREEN DISPLAY	POSITION INDICATION	AUTO SHUTOFF	OFF
COLOUR SYSTEM	PAL	ON TIMER	PR1 0:00
SOUND SYSTEM	B / G	BLUE BACK	OFF
OFF TIMER	OFF OSD. Shows 00	CHILD LOCK	OFF
PICTURE MODE (VSM)	BRIGHT	SETUP TOUR	ON

Table 2

INITIAL SETTING VALUE OF SERVICE MENU

1. Adjustment of the SERVICE MENU is made on the basis of the initial setting values ; however, the new setting values which set the screen in its optimum condition may differ from the initial setting.
2. Do not change the initial Setting Values of the Setting (Adjustment) items not listed In "ADJUSTMENT".

2. V/C

Setting item \ Colour system		Variable range	Initial setting value			
			PAL	SECAM	NTSC 3.58	NTSC 4.43
1. CUT OFF	RED	-128～+127	-50	←	←	←
	GREEN					
	BLUE					
2. DRIVE	RED	-128～+127	+ 0	←	←	←
	BLUE					
3. BRIGHT		-127～+127	+ 0	←	←	←
4. CONT.		-63～+63	+ 0	←	←	←
5. COLOUR		-63～+63	+ 0	←	←	←
6. TINT	TV	-63～+63	—	—	+ 0	+ 0
	VIDEO		—	—	+ 0	+ 0
7. SECAM BL ADJ.		-31～+31	+ 0	←	←	←
8. SHARP (Do Not Adj.)	TV	-32～+31	- 8(Fixed)	←	←	←
	VIDEO		+15(Fixed)			

3. DEFLECTION

Setting item	Variable range	Initial setting value	
		fv : 50Hz MODE	fv : 60Hz MODE
1. VER. POSITION	-04 ～ +03	- 1	- 3
2. HOR. POSITION	-16 ～ +15	+ 3	+ 3
3. VER. HEIGHT	-64 ～ +63	-35	+ 1
4. VER. LINEARITY	-32 ～ +31	+15	- 1
5. VER. SCURVE	-32 ～ +31	-32	+ 0
6. HOR. VCO ADJUST (Do Not Adj.)	-63 ～ +62	+ 0	+ 0

4.VSM PRESET

VSM Setting item \ VSM preset mode	BRIGHT	STANDARD	SOFT
TINT SETTING VALUE	+15	←	←
COLOUR SETTING VALUE	+15	←	←
BRIGHT SETTING VALUE	+15	←	←
CONT. SETTING VALUE	+30	+15	+11
SHARP SETTING VALUE	+15	←	+12

5. PRESET

The items in the following table, it is no requirement for adjustment.
If values had changed by the miss operation, set the initial setting values in the following table.

Colour System **Do Not Adjust**

Setting item		Initial setting value (Fixed value)			
		PAL	SECAM	NTSC 3.58	NTSC 4.43
1. C TRAP FIX		1	1	1	1
2. SHARP PEAK		0	0	0	0
3. ABL		1	1	1	1
4. GAMMA		0	0	0	0
5. Y. DELAY TIME	TV	0	2	2	3
	VIDEO	0	2	0	2
6. BLACK EXP START		+3	+3	+3	+3
7. C-BPF	TV	1	1	0	0
	VIDEO	1	1	1	1
8. CW / SCP		0	0	0	0
9. VIF DET LEVEL		0	0	0	0
11. IF AGC MIN		0	0	0	0
12. VIF AGC		0	0	0	0
13. VIF PMOD		0	0	0	0
19. VNR		15	15	15	15
20. RGB LIM		1	1	1	1
21. RGB LIMIT LEVEL		2	2	2	2
23. TEXT H. POSITION		-3	-3	-3	-3
24. READ DATA		———	———	———	———

Sound System **Do Not Adjust**

Setting item	B/G	I	D/K	M
10. SIF DET LEVEL	+0	+0	+0	+0
14. SIF BPF BW ADJUST	+0	+0	+0	+0
15. SIF TRAP FO ADJUST	+0	+0	+0	+0
16. SIF TRAP FO ADJUST 2	+0	+0	+0	+0
17. SIF -TRAP	0	0	0	0
18. SIF -BPF	1	0	0	0
22. SIF SW	0	1	1	1

REPLACEMENT OF IC301 (IF V/C DECODER)

- **For the IC301(IF V/C DECODER) of this model, all data are written in the micro-computer. So, write the data in the micro-computer in accordance with the following procedures before starting adjustment.**

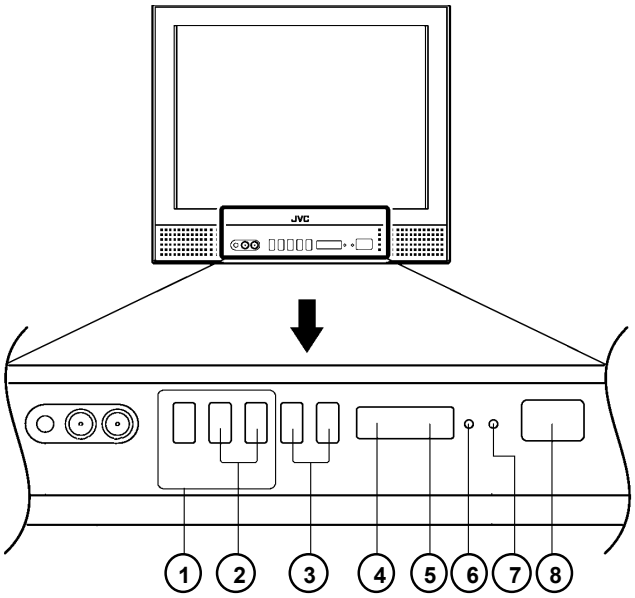
PROCEDURES

(1) Turn the POWER OFF.

(2) Replace the IC301 with a new one.

(3) While pressing MENU button and VOL+ button ON the FRONT CABINET simultaneously, turn the POWER ON. When the POWER is turned ON, the data is written in the micro-computer immediately.

LOCATIONS OF FRONT PANEL BUTTONS AND LAMPS



1	MENU buttons
2	CHANNEL −/+ buttons (MENU −/+ buttons)
3	VOLUME −/+ buttons (MENU −/+ buttons)
4	AI ECO sensor
5	REMOTE CONTROL sensor
6	ON TIMER lamp
7	POWER lamp
8	MAIN POWER button

SERVICE ADJUSTMENTS

BEFORE STARTING SERVICE ADJUSTMENT

1. **There are 2 way of adjusting this TV: One is with the REMOTE CONTROL UNIT and the other is the conventional method using adjustment parts and components.**
2. **The adjustment with the REMOTE CONTROL UNIT is made on the basis of the initial setting values. The setting values which adjust the screen to its optimum condition may differ from the initial setting values.**
3. Make sure that connection is correctly made to AC power source.
4. Turn on the power of the set and equipment before use, and start the adjustment procedures after waiting at least 30 minutes.
5. Unless otherwise specified, prepare the most suitable reception or input signal for adjustment.
6. **Never touch any adjustment parts, which are not specified in the list for this adjustment VRs, transforms, condensers, etc.**
7. Preparation for adjustment
   Unless otherwise specified in the adjustment instructions, preset the following functions with the REMOTE CONTROL UNIT.
   User mode position

PICTURE MODE (VSM)	BRIGHT
VNR	OFF
TINT / COLOUR / BRIGHT CONT. / SHARP	CENTER
BLUE BACK	OFF
OFF TIMER	OFF
AI ECO SENSOR	OFF
AUTO SHUT OFF	OFF

MEASURING INSTRUMENT AND FIXTURES

1. DC voltmeter (or digital voltmeter)
2. Oscilloscope
3. Signal generator (Pattern generator) [PAL / SECAM / NTSC]
4. Remote control unit

ADJUSTMENT ITEMS

Adjustment item	Adjustment item
B1 POWER SUPPLY	DEFLECTION circuit adjustment
FOCUS adjustment	VSM PRESET setting
IF circuit adjustment	PURITY/ CONVERGENCE adjustment
V/C (Video / Chroma) circuit adjustment	

BASIC OPERATION OF SERVICE MENU

- **The adjustment using SERVICE MENU**

The following adjustment items use the SERVICE MENU in the series of the adjustment. The adjustments are made on the basis of the initial setting values. The adjustment values which adjust the screen to the optimum condition can be different from the initial setting values. With the SERVICE MENU, various settings can be made, and they are broadly classified in the following items of settings.

1.IF ····· Adjustment of the IF circuits.
2.V/C ····· Adjustment of the VIDEO/CHROMA circuit.
3.DEF ····· Adjustment of the DEFLECTION circuit.
4.VSM PRESET ····· Adjustment of the initial setting values of VSM condition as STANDARD, SOFT and BRIGHT. (VSM : Video Status Memory)
5.PRESET ····· Adjustment of the RF circuit **[Do not adjust]**.
6. SETUP TOUR OFF ····· It should be able to select mode (LANGUAGE and AUTO CH PRESET).. **[Should be OFF]**.

- **Key operation of the SERVICE MENU**

[Enter to SERVICE MENU]

Press the **DISPLAY** key and the **PICTURE MODE** key of the REMOTE CONTROL UNIT simultaneously. Then enter the SERVICE MENU mode as shown in Fig.1.

[Exit from SERVICE MENU]

When complete the adjustment work, press the **DISPLAY** key to return to the SERVICE MENU.
And then press the **DISPLAY** key again, return to the normal screen.

[Select from SERVICE MENU]

In SERVICE MENU, press the number (1～6) key of the remote control unit, to select any of the adjustment items.
The colours which selected item characters are changed.

SERVICE MENU

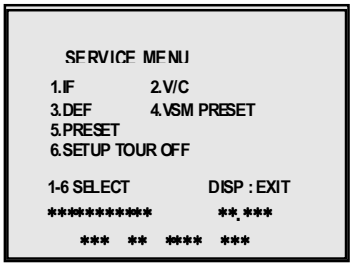
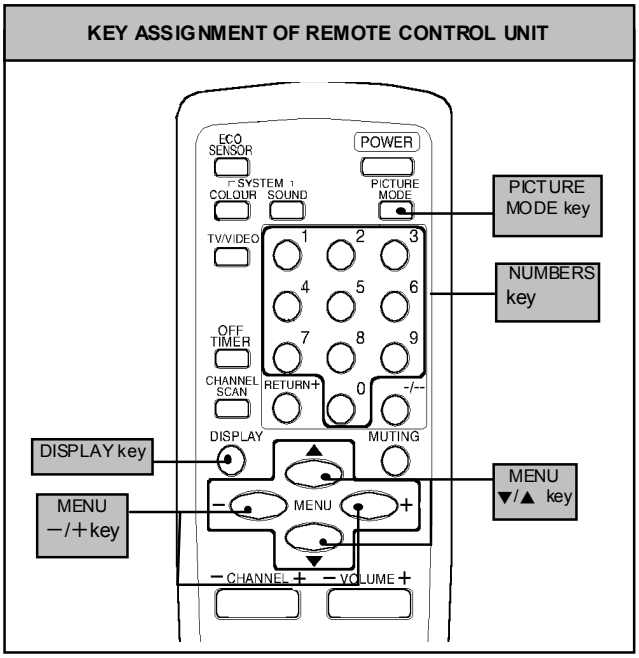


Fig.1

KEY ASSIGNMENT OF REMOTE CONTROL UNIT



[Method of setting]

1. IF

[1. VCO]

① 1 Key ····· Select **1.IF**.

② 1 Key ····· Select **1.VCO**

③ The VCO (CW) screen will be displayed a allow mark when the AFC voltage is at a certain level.

④ DISPLAY Key ····· As you press this key twice, you will return to the **SERVICE MENU**.

[2. DELAY POINT]

① 1 Key ····· Select **1.IF**.

② 2 Key ····· Select **2.DELAY POINT**.

③ MENU -/+ Key ····· Set (adjust) the setting values of the setting items.

④ DISPLAY Key ····· When this is pressed twice, you will return to the **SERVICE MENU**.

2.V/C, 3.DEF and **4.VSM PRESET**

① 2~4Key ····· Select one from **2. V/C, 3. DEF** and **4. VSM PRESET**.

② MENU ▼/▲ Key ····· Select setting items.

③ MENU -/+ Key ····· Adjust the values of the items.

④ DISPLAY Key ····· When this is pressed, return to the **SERVICE MENU**.

6.SETUP TOUR

① By pressing the 6 key, you can change the ON or OFF (**should be OFF**).

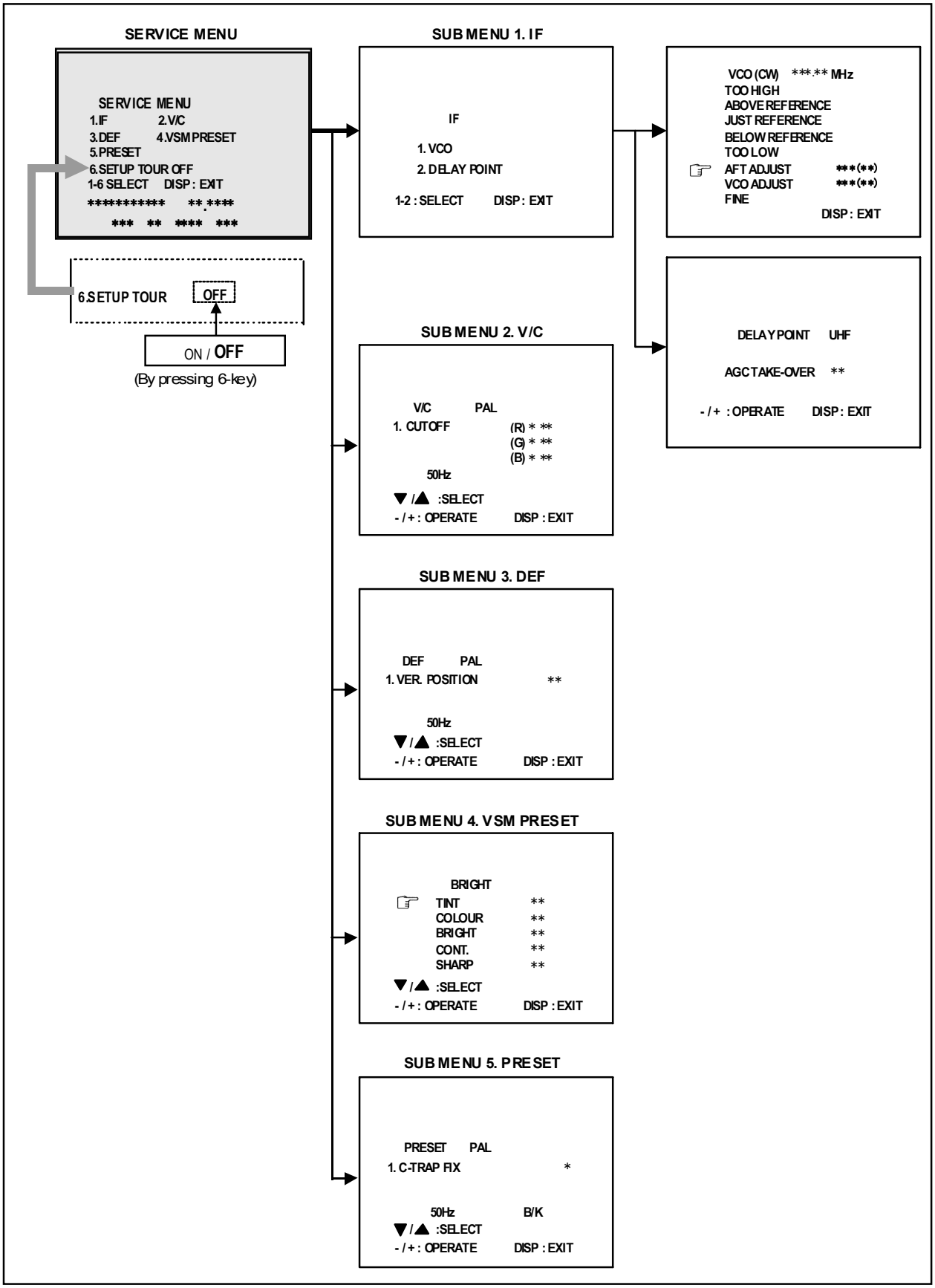
(Should be OFF)

＊· If it is ON, then you turn the TV power off, when you are turn the TV power on again. The JVC's logo will be shown about 15 seconds automatically.

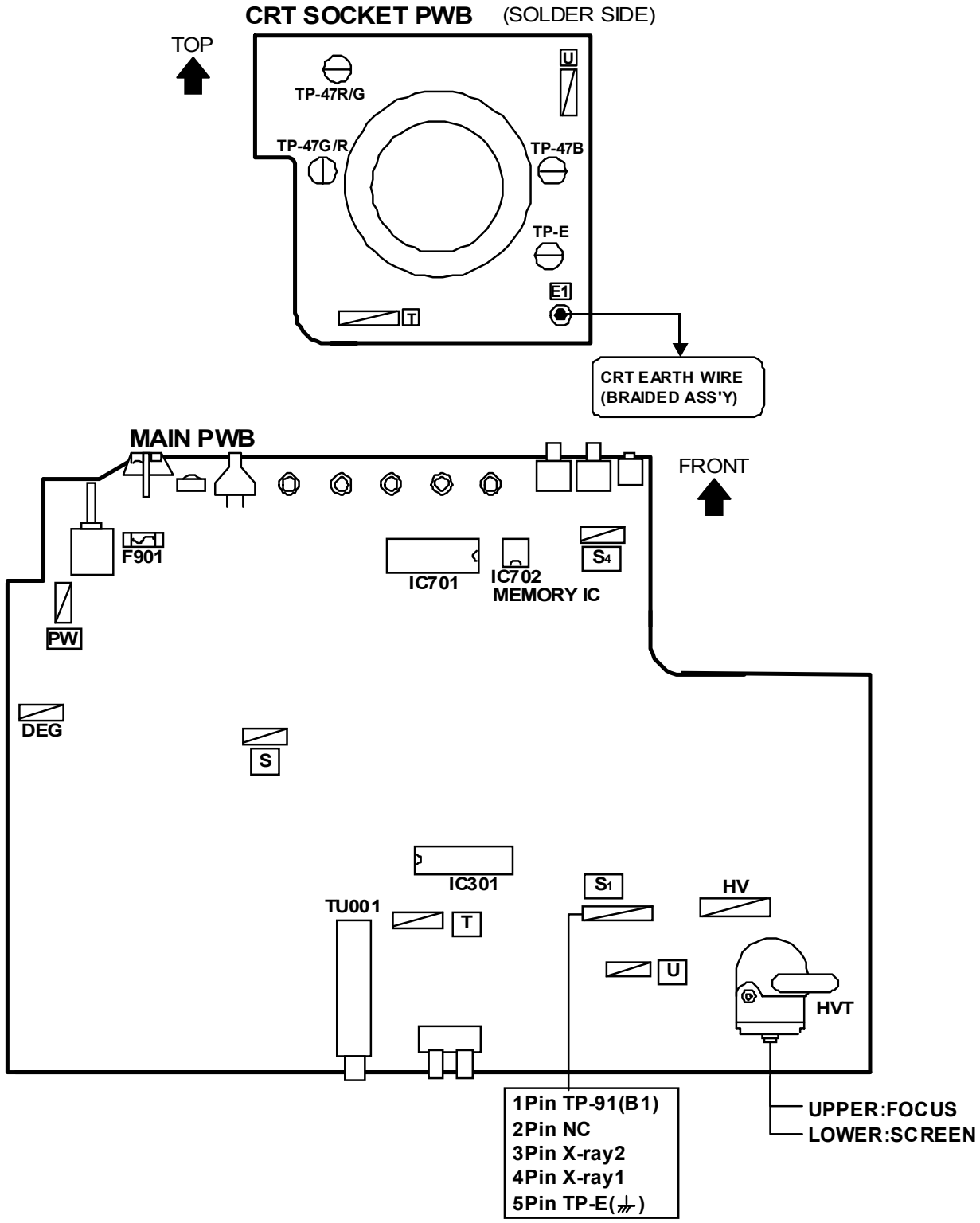
② MENU -/+ Key ····· Select Language.

③ MENU ▼ Key ····· Auto Search.

SERVICE MENU FLOW CHART



ADJUSTMENT LOCATIONS



ADJUSTMENTS

B1 POWER SUPPLY

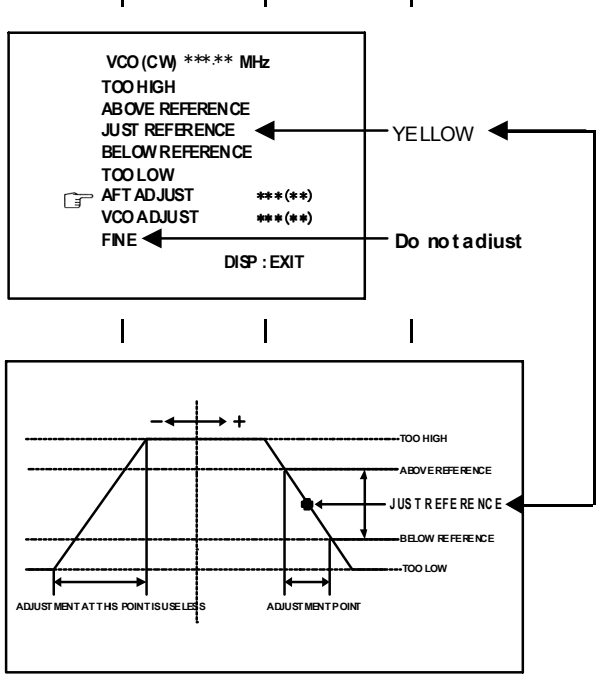
Item	Measuring instrument	Test point	Adjustment part	Description
Check of B1 Power Supply	Signal generator DC Volt-meter	TP-91 (B1) TP-E (⏚)		1. Input a whole black signal. 2. Connect a DC voltmeter to TP-91(B1) and TP-E (⏚). 3. Make sure that the voltage is DC116.5±2.0V.

FOCUS ADJUSTMENT

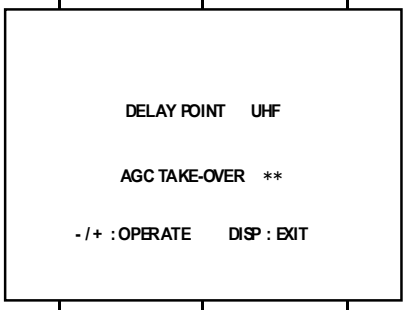
Item	Measuring instrument	Test point	Adjustment part	Description
Adjustment of FOCUS	Signal generator		FOCUS VR [In HVT]	1. Input a cross-hatch signal. 2. While watching the screen, adjust the FOCUS VR to make the vertical and horizontal lines as fine and sharp as possible. 3. Make sure that when the screen is darkened, the lines remain in good focus.

IF CIRCUIT ADJUSTMENT

Item	Measuring instrument	Test point	Adjustment part	Description
Adjustment of VCO(CW)	Signal generator Remote control unit		1. VCO	●Please use signal generator which is correct proof about the sending frequency. 1. Input the PAL full colour bar (210.25MHz) signal. 2. Enter the SERVICE MENU. 3. Select 1.IF from the SERVICE MENU. 4. Press 1 key and select **1. VCO**. 5. Select **VCO ADJUST** with MENU ▲/▼ key. 6. Press MENU -/+ key until the colour of the characters TOO HIGH changes blue to yellow. Then gradually press the MENU -/+ key until the TOO LOW changes yellow. At this time, confirm that the value of **VCO ADJUST** is near +00. 0. Select **AFT ADJUST** with MENU ▲/▼ key. 8. Press MENU -/+ key until the characters JUST REFERENCE changes blue to yellow. 9. Press the **DISPLAY** key three times to return to normal screen.



Item	Measuring instrument	Test point	Adjustment part	Description
Adjustment of DELAY POINT (AGC)	**Signal generator** **Remote control unit**		**DELAY POINT (AGC TAKE-OVER)**	1. Input a black and white signal (colour off). 2. Enter the SERVICE MENU. 3. Select **1. IF** from the SERVICE MENU. 4. Select **2. DELAY POINT** by pressing the **2** key on the remote control unit. 5. Set the setting values of the setting items as shown bellow table. 6. Then adjust the MENU - / + key until video noise disappears. 7. Turn to other channels and make sure that there are no irregularities.

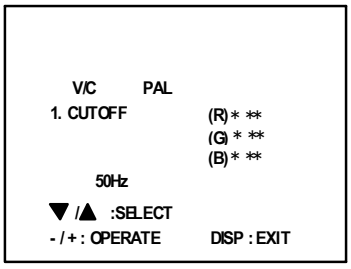


Setting Item		Variable range	Initial setting value		
			MATSUSHITA (QAU0287-001)	MURATA (QAU0185-004)	ALPS (QAU0282-001)
DELAY POINT (AGC TAKE OVER)	**NTSC 3.58**	0～127	45	45	47
	OTHER		35	45	35

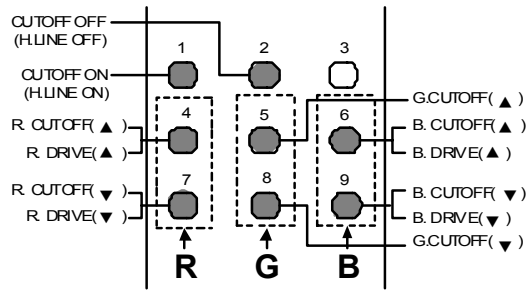
VIDEO / CHROMA CIRCUIT ADJUSTMENT

The setting (adjustment) using the REMOTE CONTROL UNIT is made on the basis of the initial setting values.
The setting values which adjust the screen to the optimum condition can be different from the initial setting values.
Do not change the initial setting values of the setting items not listed in "ADJUSTMENT".

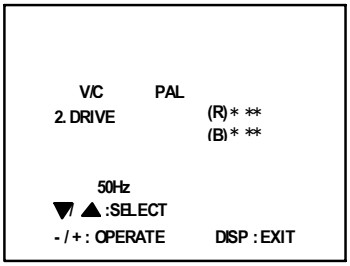
Item	Measuring instrument	Test point	Adjustment part	Description
Adjustment of WHITE BALANCE (Low light)	**Signal generator** **Remote control unit**		**1. CUT OFF (R)** **CUT OFF (G)** **CUT OFF (B)** **SCREEN VR** **[IN HVT]**	1. Input a black and white signal (colour off). 2. Enter the SERVICE MENU. 3. Select **2. V/C** from the SERVICE MENU, then select **1. CUT OFF** (R), (G) and (B) . 4. Set each value to initial setting value with 4～9 keys of the remote control unit. 5. Press the **1** key of the remote control unit to show the single horizontal line on screen. 6. Turn the **SCREEN VR** fully counter-clockwise, then slowly turn it clockwise to where one of a red, blue or green colour is faintly visible. 7. Use keys **4～9** of the remote control unit and adjust the other 2 colours which except the appeared colour to where the single horizontal line appears white. 8. Turn the **SCREEN VR** to where the single horizontal line glows faintly. 9. Press the **2** key to turn off the single horizontal line. 10. Press the DISPLAY key twice to return to the normal screen.
Adjustment of WHITE BALANCE (High light)	**Signal generator** **Remote control unit**		**2. DRIVE (R)** **DRIVE (B)**	1. Input a black and white signal (colour off). 2. Enter the SERVICE MENU. 3. Select **2. V/C** from the SERVICE MENU. 4. Select **2. DRIVE (R) / (B)** with MENU ▼/▲ key, and set each value to initial setting value with 4 and 7 or 6 and 9 keys of the remote control unit. 5. Use the keys **4** and **7** or **6** and **9** to produce a white screen 6. Press the DISPLAY key twice to return to the nomal screen.



KEY ASSIGNMENT OF REMOTE CONTROL UNIT



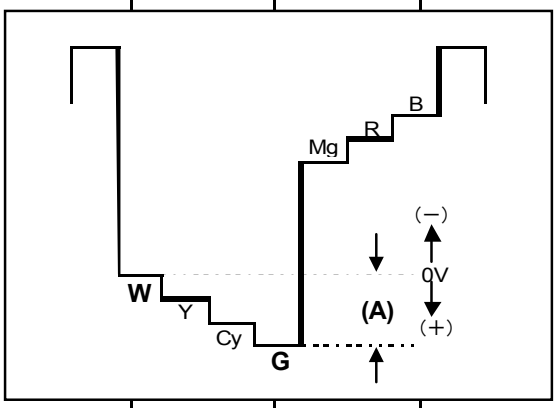
Adjustment item		Variable range	Initial setting value
1. CUT OFF	R	-128～+127	-50
	G	-128～+127	-50
	B	-128～+127	-50



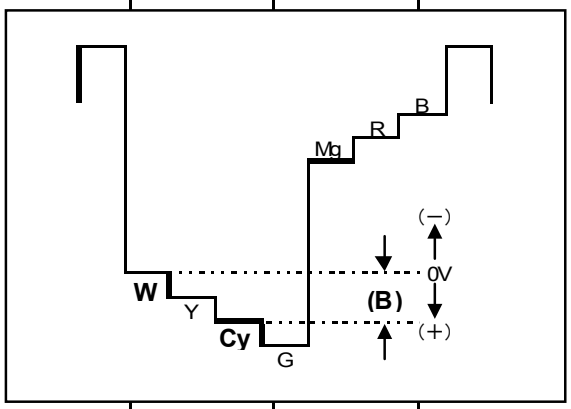
Adjustment item		Variable range	Initial setting value
2. DRIVE	R	-128～+127	+0
	B	-128～+127	+0

Item	Measuring instrument	Test point	Adjustment part	Description
Adjustment of SUB BRIGHT	**Remote control unit**		**3. BRIGHT**	1. Receive any broadcast. 2. Enter the SERVICE MENU. 3. Select **2. V/C** from SERVICE MENU. 4. Select **3. BRIGHT** with the MENU ▼/▲key. 5. Set the initial setting value with the MENU - / + key. 6. If the brightness is not the best with the initial set value, make fine adjustment until you get the best brightness.
Adjustment of SUB CONT.	**Remote control unit**		**4. CONT.**	1. Receive any broadcast. 2. Enter the SERVICE MENU. 3. Select **2. V/C** from SERVICE MENU. 0. Select **4. CONT**. with the MENU ▼/▲key. 5. Set the initial setting value with the MENU - / + key. 6. If the contrast is not the best with the initial set value, make fine adjustment until you get the best contrast.
Adjustment of SUB COLOUR I	**Remote control unit**		**5. COLOUR**	**[Method of adjustment without measuring instrument]**
			PAL COLOUR	1. Receive a PAL broadcast. 2. Enter the SERVICE MENU. 3. Select **2. V/C** from the SERVICE MENU. 4. Select **5. COLOUR** with the MENU ▼/▲ key. 5. Set the initial setting value for PAL COLOUR with the MENU - / + key. 6. If the colour is not the best with the initial set value, make fine adjustment until you get the best colour.
			SECAM COLOUR	1. Receive a SECAM broadcast. 2. Make fine adjustment of SECAM COLOUR as previously.
			NTSC 3.58 COLOUR	1. Receive a NTSC 3.58MHz broadcast. 2. Make similar fine adjustment of NTSC 3.58 COLOUR as previously.
			NTSC 4.43 COLOUR	When NTSC 3.58 adjustment completed, NTSC 4.43 will be automatically set at the respective values.

Item	Measuring instrument	Test point	Adjustment part	Description
Adjustment of SUB COLOUR Ⅱ	**Signal generator** **Oscillo-scope** **Remote control unit**	**TP-47G/R** **TP-E (⏚)** **[CRT SOCKET PWB]**	**5. COLOUR**	**[Method of adjustment using measuring instrument]**
			PAL COLOUR	1. Input a PAL full field colour bar signal (75% white). 2. Enter the SERVICE MENU. 3. Select **2. V/C** from SERVICE MENU. 4. Select **5. COLOUR** with the MENU ▼/▲ key. 5. Set the initial setting value of PAL COLOUR with the MENU - / + key. 6. Connect the oscilloscope between TP-47G/R and TP-E (⏚). 7. Adjust PAL COLOUR to bring the value of **(A)** in the illustration to +12V(W-G). (Voltage value between (**W**) and (**G**))
			SECAM COLOUR	1. Input a SECAM full field colour bar signal (75% white). 2. Set the initial setting value of SECAM COLOUR with the MENU - / + key. 3. Adjust SECAM COLOUR to bring the value of **(A)** in the illustration to +8V(W-G). (Voltage value between (**W**) and (**G**))
			NTSC 3.58 COLOUR	1. Input a NTSC 3.58 full field colour bar signal (75% white). 2. Set the initial setting value of NTSC 3.58 COLOUR with the MENU - / + key. 3. Adjust NTSC 3.58 COLOUR to bring the value of **(A)** in the illustration to +11V(W-G). (Voltage value between (**W**) and (**G**))
			NTSC 4.43 COLOUR	When NTSC 3.58 is set, NTSC 4.43 will be automatically set at the respective values.

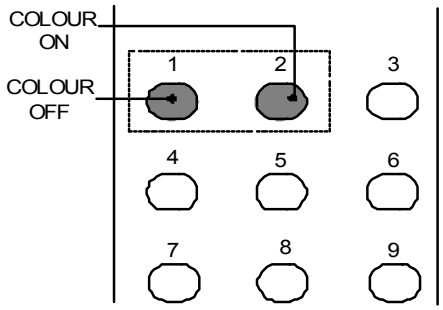


Item	Measuring instrument	Test point	Adjustment part	Description
Adjustment of TINT Ⅰ	**Signal generator** **Remote control unit**		**6. TINT**	**[Method of adjustment without measuring instrument]**
			NTSC 3.58 TINT	1. Input a NTSC 3.58 full field colour bar signal (75% white). 2. Enter the SERVICE MENU. 3. Select **2. V/C** from SERVICE MENU. 4. Select **6. TINT** with the MENU ▼/▲ key. 5. Set the initial setting value of NTSC 3.58 with the MENU - / + key. 6. If you cannot get the best tint with the initial setting value, make fine adjustment until you get the best tint.
			NTSC 4.43 TINT	When NTSC 3.58 is set, NTSC 4.43 will be automatically set at the respective values.
Adjustment of TINT Ⅱ	**Signal generator** **Oscillo-scope** **Remote control unit**	**TP-47G/R** **TP-E (⏚)** **[CRT SOCKET PWB]**	**6. TINT**	**[Method of adjustment using measuring instrument]**
			NTSC 3.58 TINT	1. Input a NTSC 3.58 full field colour bar signal (75% white). 2. Enter the SERVICE MENU. 3. Select **2. V/C** from SERVICE MENU. 4. Select **6. TINT** with the MENU ▼/▲ key. 5. Set the initial setting value of NTSC 3.58 with the MENU - / + key. 6. Connect the oscilloscope between TP-47G/R and TP-E. (⏚). 7. Adjust NTSC 3.58 TINT to bring the value of **(B)** in the illustration to +9V(W- **Cy**). (Voltage value between (**W**) and (**Cy**))
			NTSC 4.43 TINT	When NTSC 3.58 is set, NTSC 4.43 will be automatically set at the respective values.



Item	Measuring instrument	Test point	Adjustment part	Description
Adjustment of SECAM BLACK OFFSET	**Remote control unit** **Signal generator**		**7.SECAM BL ADJUST**	**[Method of adjustment using measuring instrument]** 1. Input a SECAM full field colour bar signal. 2. Enter the SERVICE MENU. 3. Select **2. V/C** from SERVICE MENU. 4. Select **7. SECAM BL ADJUST** with MENU ▼/▲ key. 5. Set the initial setting value with the MENU -/ + key. 6. Switch the ①key (colour OFF) and ②key (colour ON) on the remote control and make sure that there is no colour on the black and white screen. 7. If the black and white screen is not best with the initial setting value, make fine adjustment until you get the best black and white screen. 8. While watching the screen, adjust the value to be the same colour between ON & OFF by ten key on the remote control unit. 9. Press the DISPLAY key twice to return to the normal screen.

KEY ASSIGNMENT OF REMOTE CONTROL UNIT

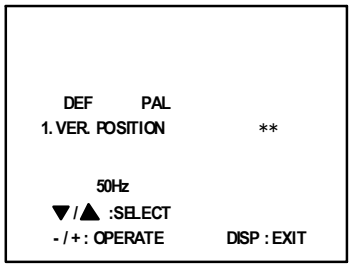


DEFLECTION CIRCUIT ADJUSTMENT

- There are 2 modes of adjustment (setting value) ---- ① 50Hz mode and ② 60Hz mode ---- depending upon the kind of signals (vertical frequency 50Hz / 60Hz).
- When adjusted in mode ① , mode ② will be automatically set.

The setting (adjustment) using the REMOTE CONTROL UNIT is made on the basis of the initial setting values.
The setting values which adjust the screen to the optimum condition can be different from the initial setting values.

Item	Measuring instrument	Test point	Adjustment part	Description
Adjustment of V.HEIGHT & V.POSITION	**Signal generator** **Remote control unit**		**1. VER. POSITION** **3. VER. HEIGHT**	1. Input a circle pattern signal. 2. Enter the SERVICE MENU. 3. Select **3. DEF.** from SERVICE MENU. 4. Select **1. VER. POSITION** with the MENU ▼/▲ key. 5. Set the initial setting value with the MENU - / + key. 6. Adjust **V** and **V'** to be equal with the MENU - / + key as shown in Fig.2. 7. Input a cross-hatch signal. 8. Select **3. V. HEIGHT** with the MENU ▼/▲ key. 9. Set the initial setting value with the MENU - / + key. 10. As shown in Fig.1, adjust **VER. HEIGHT** and make the vertical screen size **92%** of the picture size with the MENU - / + keys of remote control unit.
Adjustment of HOR. POSITION	**Signal generator** **Remote control unit**		**2. HOR. POSITION**	11. Input a circle pattern signal. 12. Select **2. HOR POSITION** with the MENU ▼/▲ key. 13. Set the initial setting value of **2. HOR. POSITION** with the MENU - / + key. 14. Adjust **2. HOR. POSITION** to make **H=H"** as shown in Fig.2 with the MENU - / + key.



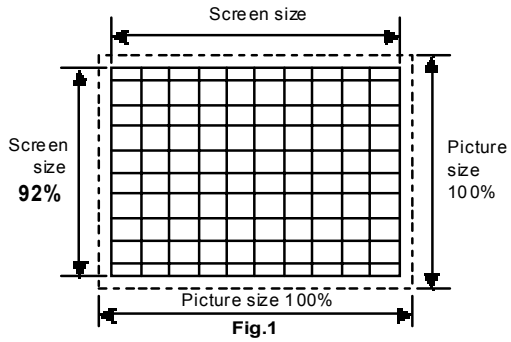


Fig.1

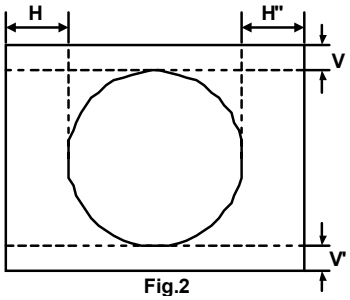


Fig.2

Item	Measuring instrument	Test point	Adjustment part	Description
Adjustment of VER. LIN. & VER. SCURVE	**Signal generator** **Remote control unit**		**4. VER. LIN.** **5. VER. SCURVE**	● **When the vertical linearity has been deteriorated remarkably, perform the following steps.** 15. Input a cross-hatch signal. 16. Select **4. VER. LIN.** with the MENU ▼/▲ key. 17. Set the initial setting value of **4. VER LIN.** with the MENU - / + key. 18. Select **5. VER. SCURVE** with the MENU ▼/▲ key. 19. Set the initial setting value of **5. VER. SCURVE** with the MENU - / + key. 20. Adjust **4. VER. LIN.** and **5. VER. SCURVE** so that the spaces of each line as shown in Fig.3 on **TOP**, **CENTER** and **BOTTOM** become uniform. Make sure that the adjustment is properly done on the screen of 60Hz mode. **[NOTE]** ● Adjust to make both 50Hz & 60Hz are the same v. size and fine straight line. ● When adjust again, adjust 50Hz mode first. ● When adjust in 60Hz mode, only 60Hz mode is adjust.

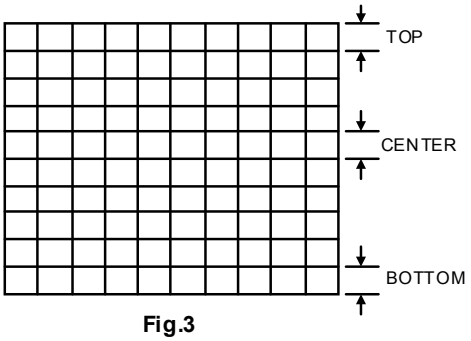
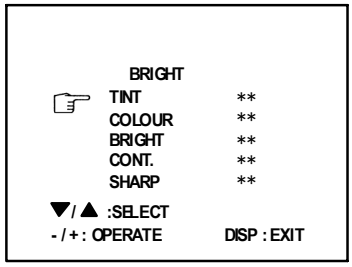


Fig.3

VSM PRESET SETTING

Item	Measuring instrument	Test point	Adjustment part	Description
Setting of VSM PRESET	**Remote control unit**		**TINT** **COLOUR** **BRIGHT** **CONT.** **SHARP**	1. Enter the SERVICE MENU. 2. Select **4. VSM PRESET** from the SERVICE MENU. 3. Select BRIGHT with the PICTURE MODE key. 4. Adjust the MENU ▼/▲ and MENU - / + key to bring the set values of **TINT ～ SHARP** to the values shown in the below table. 5. Respectively select the VSM PRESET mode for SOFT and STANDARD, and make similar adjustment as in 3 above.



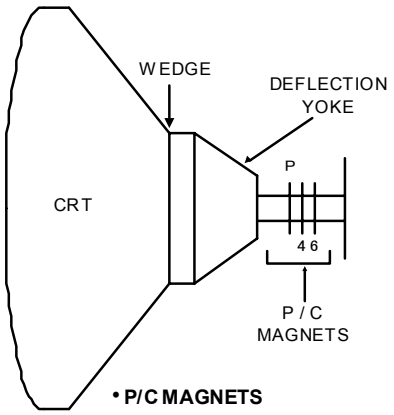
● VSM PRESET

VSM Setting Item	BRIGHT	STANDARD	SOFT
TINT	+15	←	←
COLOUR	+15	←	←
BRIGHT	+15	←	←
CONT	+30	+15	+11
SHARP	+15	←	+12

PURITY / CONVERGENCE ADJUSTMENT

PURITY ADJUSTMENT

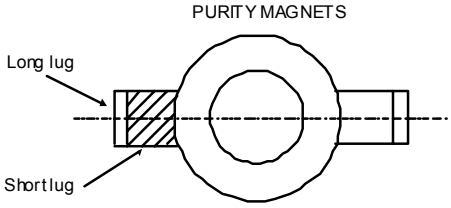
1. Demagnetize CRT with the demagnetizer.
2. Loosen the retainer screw of the deflection yoke.
3. Remove the wedges.
4. Input a green raster signal from the signal generator, and turn the screen to green raster.
5. Move the deflection yoke backward.
6. Bring the long lug of the purity magnets on the short lug and position them horizontally. (Fig.2)
7. Adjust the gap between two lugs so that the GREEN RASTER will come into the center of the screen. (Fig.3)
8. Move the deflection yoke forward, and fix the position of the deflection yoke so that the whole screen will become green.
9. Insert the wedge to the top side of the deflection yoke so that it will not move.
10. Input a cross hatch signal.
11. Verify that the screen is horizontal.
12. Input red and blue raster signals, and make sure that purity is properly adjusted.



• P/C MAGNETS

P : PURITY MAGNET
4 : 4 POLES (convergence magnets)
6 : 6 POLES (convergence magnets)

Fig.1



Bring the long lug over the short lug and position them horizontally.

Fig.2

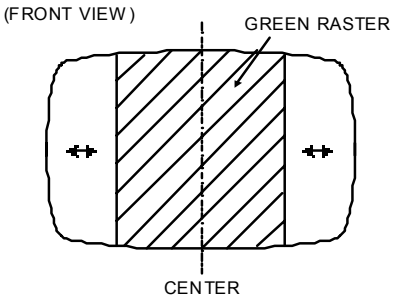


Fig.3

STATIC CONVERGENCE ADJUSTMENT

1. Input a cross hatch signal.
2. Using 4-pole convergence magnets, overlap the red and blue lines in the center of the screen (Fig.1) and turn them to magenta (red/blue).
3. Using 6-pole convergence magnets, overlap the magenta(red/blue) and green lines in the center of the screen and turn them to white.
4. Repeat 2 and 3 above, and make best convergence.

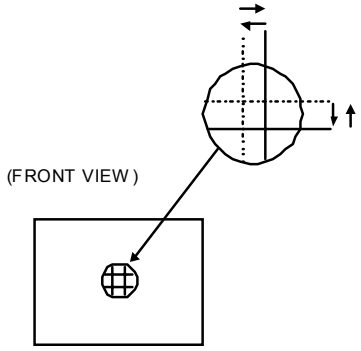


Fig.1

DYNAMIC CONVERGENCE ADJUSTMENT

1. Move the deflection yoke up and down and overlap the lines in the periphery. (Fig. 2)
2. Move the deflection yoke left to right and overlap the lines in the periphery. (Fig. 3)
3. Repeat 1 and 2 above, and make best convergence.

(FRONT VIEW)

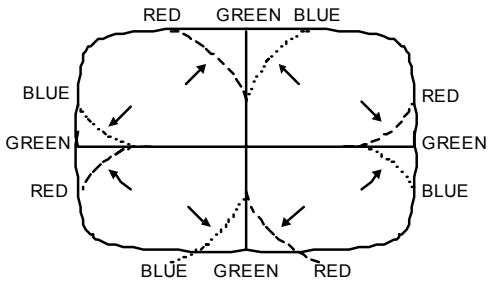


Fig.2

● After adjustment, fix the wedge at the original position.
Fasten the retainer screw of the deflection yoke.
Fix the 6 magnets with glue.

(FRONT VIEW)

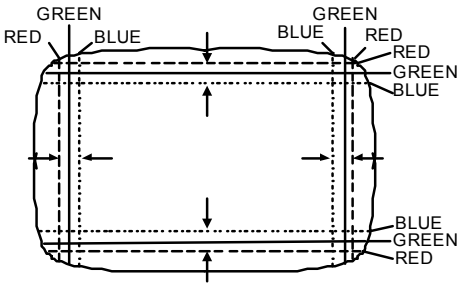


Fig.3

REPLACEMENT OF CHIP COMPONENT

■ CAUTIONS

1. Avoid heating for more than 3 seconds.
2. Do not rub the electrodes and the resist parts of the pattern.
3. When removing a chip part, melt the solder adequately.
4. Do not reuse a chip part after removing it.

■ SOLDERING IRON

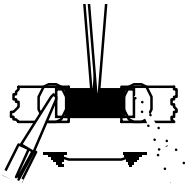
1. Use a high insulation soldering iron with a thin pointed end of it.
2. A 30w soldering iron is recommended for easily removing parts.

■ REPLACEMENT STEPS

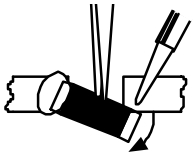
1. How to remove Chip parts

◆ **Resistors, capacitors, etc**

(1) As shown in the figure, push the part with tweezers and alternately melt the solder at each end.

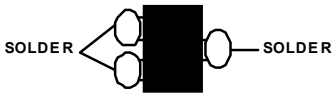


(2) Shift with tweezers and remove the chip part.

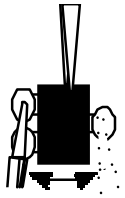


◆ **Transistors, diodes, variable resistors, etc**

(1) Apply extra solder to each lead.



(2) As shown in the figure, push the part with tweezers and alternately melt the solder at each lead. Shift and remove the chip part.

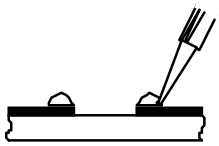


Note : After removing the part, remove remaining solder from the pattern.

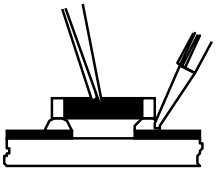
2. How to install Chip parts

◆ **Resistors, capacitors, etc**

(1) Apply solder to the pattern as indicated in the figure.



(2) Grasp the chip part with tweezers and place it on the solder. Then heat and melt the solder at both ends of the chip part.

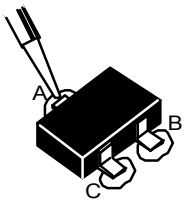


◆ **Transistors, diodes, variable resistors, etc**

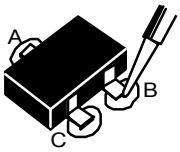
(1) Apply solder to the pattern as indicated in the figure.

(2) Grasp the chip part with tweezers and place it on the solder.

(3) First solder lead **A** as indicated in the figure.



(4) Then solder leads **B** and **C**.



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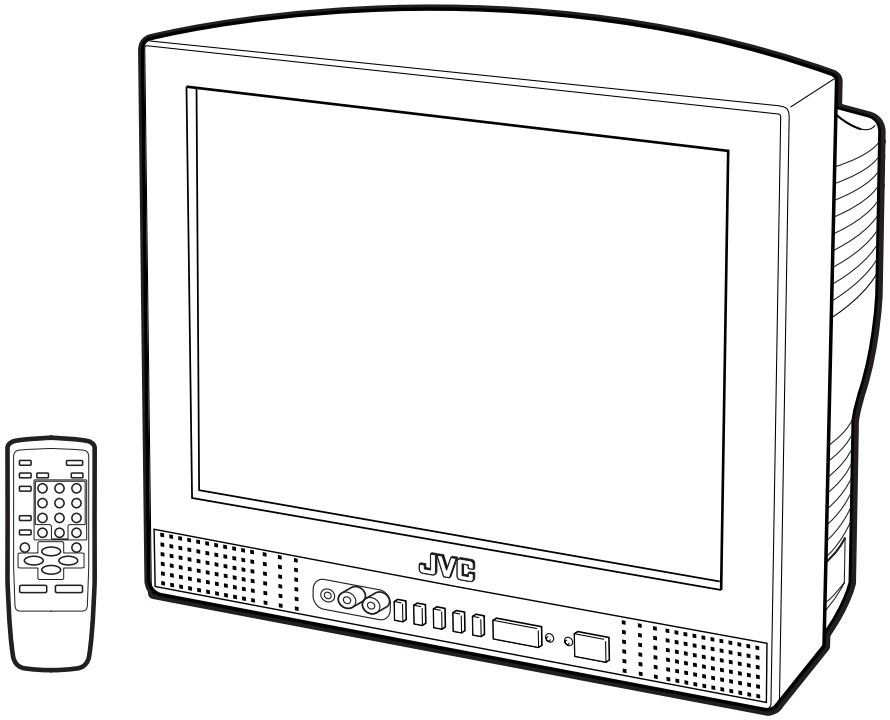
SCHEMATIC DIAGRAMS

COLOUR TELEVISION

BASIC CHASSIS
CG

AV-21E3

CD-ROM No.SML200208



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- SEMICONDUCTOR SHAPES ---------- 2-2
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No.52028
Jul. 2002

AV-21E3

AV-21E3
STANDARD CIRCUIT DIAGRAM

■ NOTE ON USING CIRCUIT DIAGRAMS

1.SAFETY

The components identified by the ⚠ symbol and shading are critical for safety. For continued safety replace safety critical components only with manufactures recommended parts.

2.SPECIFIED VOLTAGE AND WAVEFORM VALUES

The voltage and waveform values have been measured under the following conditions.

(1)Input signal	: Colour bar signal		
(2)Setting positions of each knob/button and variable resistor	: Original setting position when shipped		
(3)Internal resistance of tester	:DC 20kΩ /V		
(4)Oscilloscope sweeping time	:H	⇒	20μS/div
	:V	⇒	5mS/div
	:Others	⇒	Sweeping time is specified
(5)Voltage values	:All DC voltage values		

∗ Since the voltage values of signal circuit vary to some extent according to adjustments, use them as reference values.

3.INDICATION OF PARTS SYMBOL [EXAMPLE]

● In the PW board :R1209 → R209

4.INDICATIONS ON THE CIRCUIT DIAGRAM

(1)Resistors

● Resistance value

No unit	:[Ω]
K	:[K Ω]
M	:[M Ω]

● Rated allowable power

No indication	:1/ 16 [W]
Others	:As specified

● Type

No indication	:Carbon resistor
OMR	:Oxide metal film resistor
MFR	:Metal film resistor
MPR	:Metal plate resistor
UNFR	:Uninflammable resistor
FR	:Fusible resistor

∗ Composition resistor 1/2 [W] is specified as 1/2S or Comp.

(2)Capacitors

● Capacitance value

1 or higher	:[pF]
less than 1	:[μF]

● Withstand voltage

No indication	:DC50[V]
Others	:DC withstand voltage [V]
AC indicated	:AC withstand voltage [V]

* Electrolytic Capacitors
47/50[Example]:Capacitance value [μF]/withstand voltage[V]

●Type

No indication	:Ceramic capacitor
MM	:Metalized mylar capacitor
PP	:Polypropylene capacitor
MPP	:Metalized polypropylene capacitor
MF	:Metalized film capacitor
TF	:Thin film capacitor
BP	:Bipolar electrolytic capacitor
TAN	:Tantalum capacitor

(3)Coils

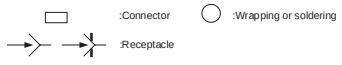
No unit	:[μH]
Others	:As specified

(4)Power Supply

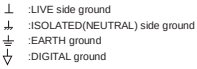
∗Respective voltage values are indicated

(5)Test point

(6)Connecting method



(7)Ground symbol



5.NOTE FOR REPAIRING SERVICE

This model's power circuit is partly different in the GND. The difference of the GND is shown by the LIVE : (⊥) side GND and the ISOLATED(NEUTRAL) : (⏚) side GND.Therefore, care must be taken for the following points.

(1)Do not touch the LIVE side GND or the LIVE side GND and the ISOLATED(NEUTRAL) side GND simultaneously. If the above caution is not respected, an electric shock may be caused. Therefore, make sure that the power cord is surely removed from the receptacle when, for example, the chassis is pulled out.

(2)Do not short between the LIVE side GND and ISOLATED(NEUTRAL) side GND or never measure with a measuring apparatus measure with a measuring apparatus (oscilloscope, etc.) the LIVE side GND and ISOLATED(NEUTRAL) side GND at the same time.
If the above precaution is not respected , a fuse or any parts will be broken.

◇ **Since the circuit diagram is a standard one, the circuit and circuit constants may be subject to change for improvement without any notice.**

NOTE

◇ **Due improvement in performance, some part numbers show in the circuit diagram may not agree with those indicated in the part list.**
When ordering parts, please use the numbers that appear in the Parts List.

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SEMICONDUCTOR SHAPES

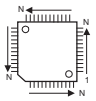
TRANSISTOR

BOTTOM VIEW	FRONT VIEW				TOP VIEW
					CHIP TR

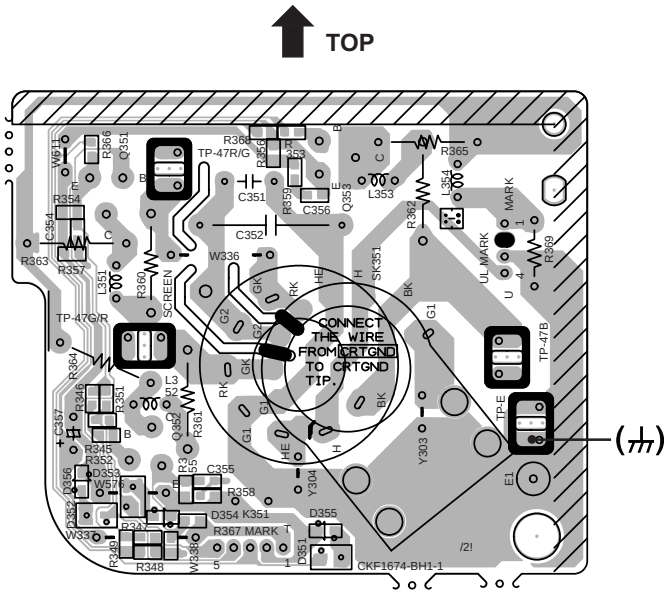
IC

BOTTOM VIEW	FRONT VIEW			TOP VIEW

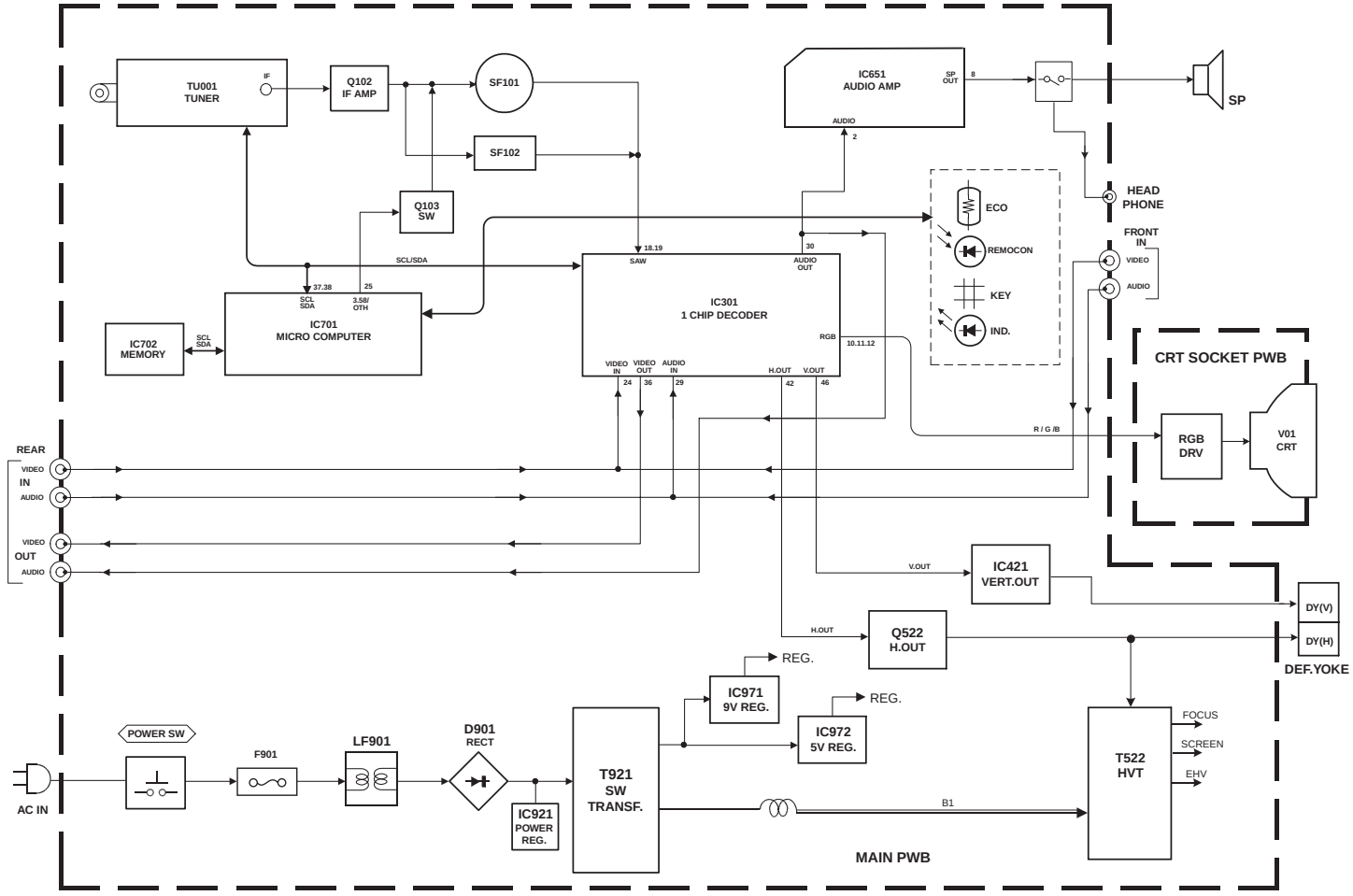
CHIP IC

TOP VIEW		
		

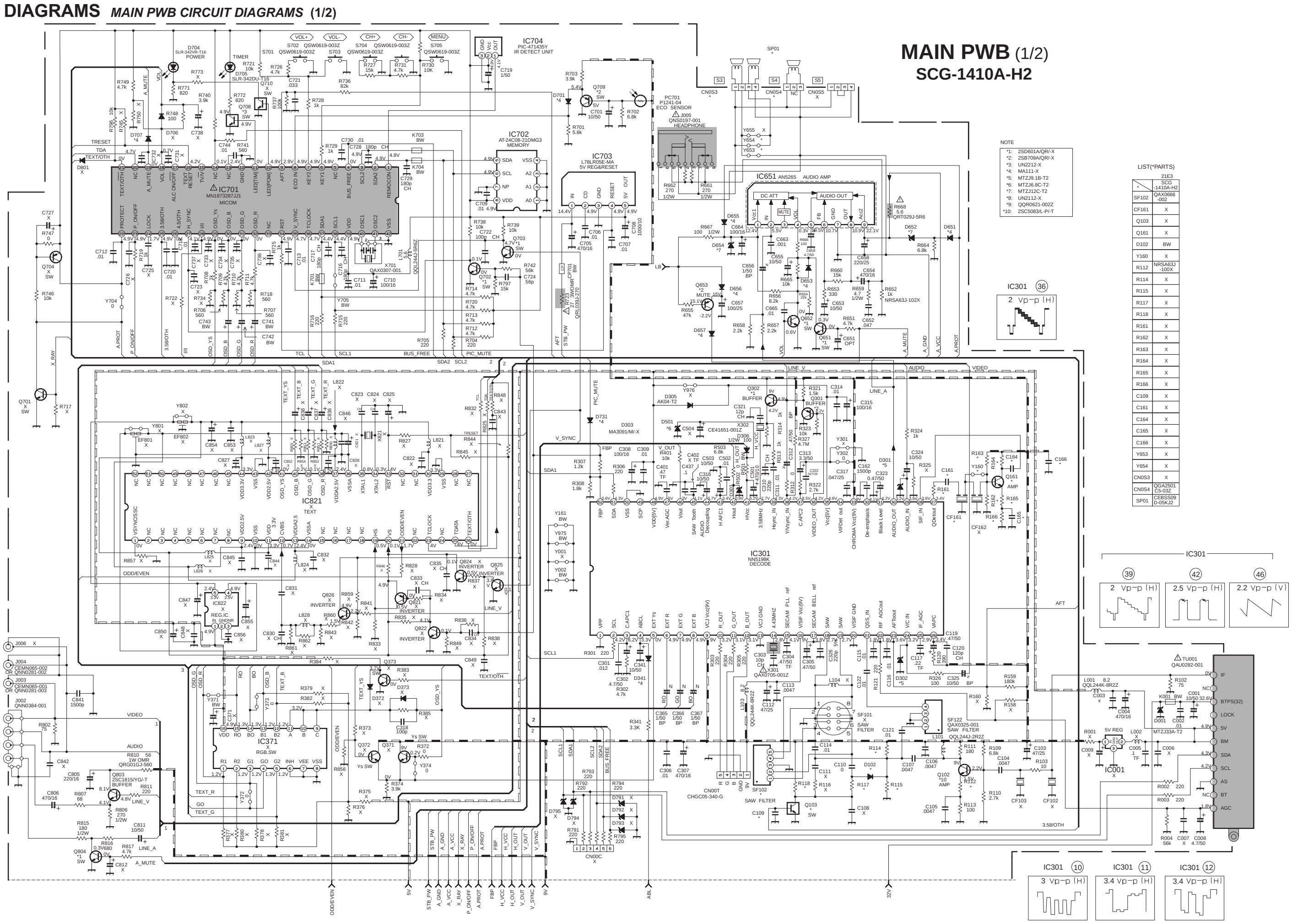
CRT SOCKET PWB PATTERN



BLOCK DIAGRAM



CIRCUIT DIAGRAMS *MAIN PWB CIRCUIT DIAGRAMS* (1/2)


MAIN PWB (1/2)
SCG-1410A-H2
IC701 MN1873287JJ1 MICOM
IC702 AT-24C08-21DMG3 MEMORY
IC703 L78LR05E-MA 5V REG&RESET
IC704 PIC-471435Y IR DETECT UNIT
IC651 AN5265 AUDIO AMP
IC821 TEXT
IC822 REG.IC
IC371 RGB.SW
IC301 NN5198K DECODE
IC001
TU001 QAU0282-001
SF101 SAW FILTER
SF102 SAW FILTER
SF122 QAX0325-001 SAW FILTER
J005 QNS0197-001 HEADPHONE
PC701 P1241-04 ECO SENSOR
FRONT
REAR
IC301 36 2 Vp-p (H)
IC301 39 2 Vp-p (H)
IC301 42 2.5 Vp-p (H)
IC301 46 2.2 Vp-p (V)
IC301 10 3 Vp-p (H)
IC301 11 3.4 Vp-p (H)
IC301 12 3.4 Vp-p (H)

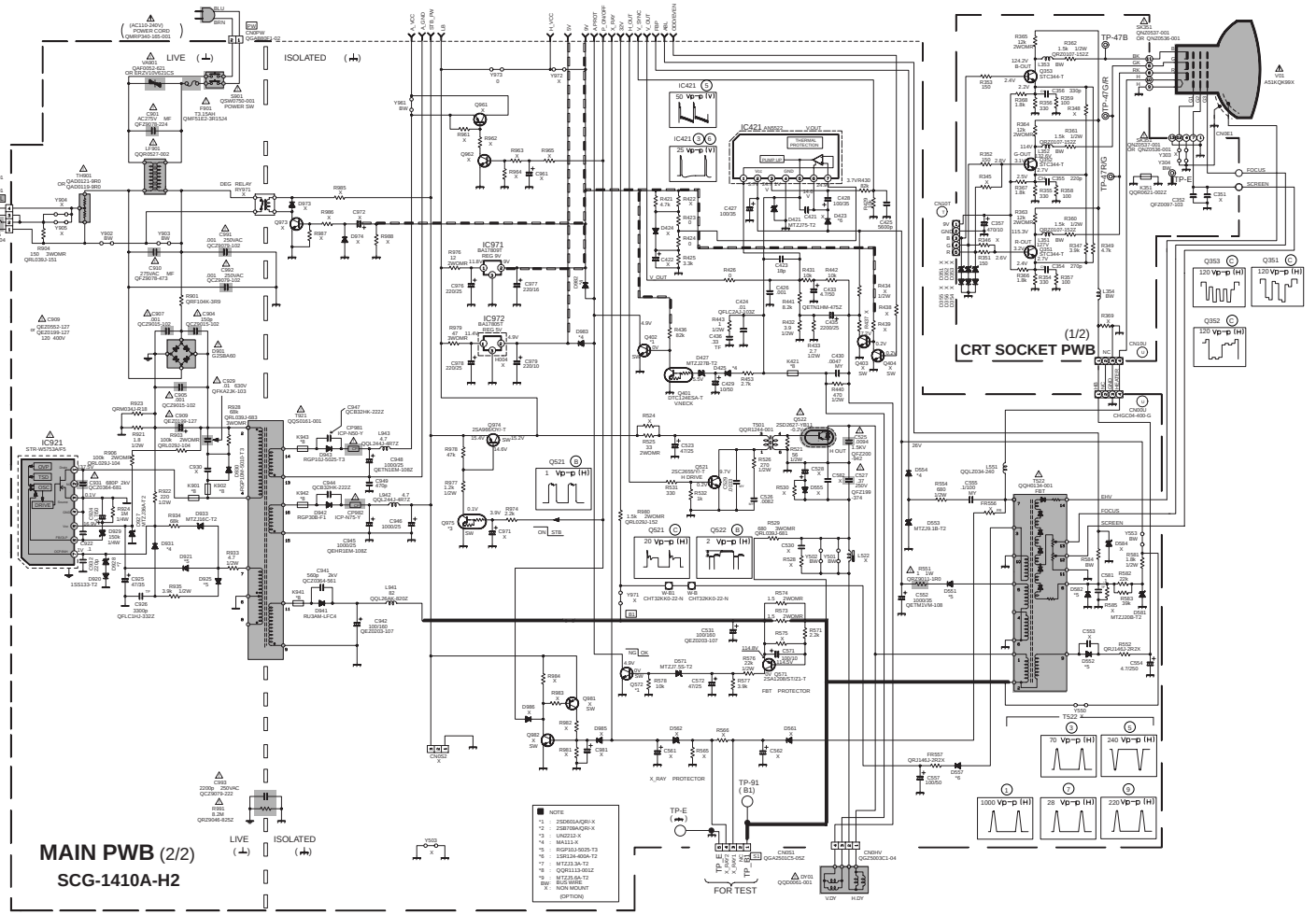
NOTE

- *1: 2SD601A/QR/-X
- *2: 2SB709A/QR/-X
- *3: UN2212-X
- *4: MA111-X
- *5: MTZJ9.1B-T2
- *6: MTZJ6.8C-T2
- *7: MTZJ12C-T2
- *8: UN2112-X
- *9: QQR0621-002Z
- *10: 2SC5083/L-P/-T

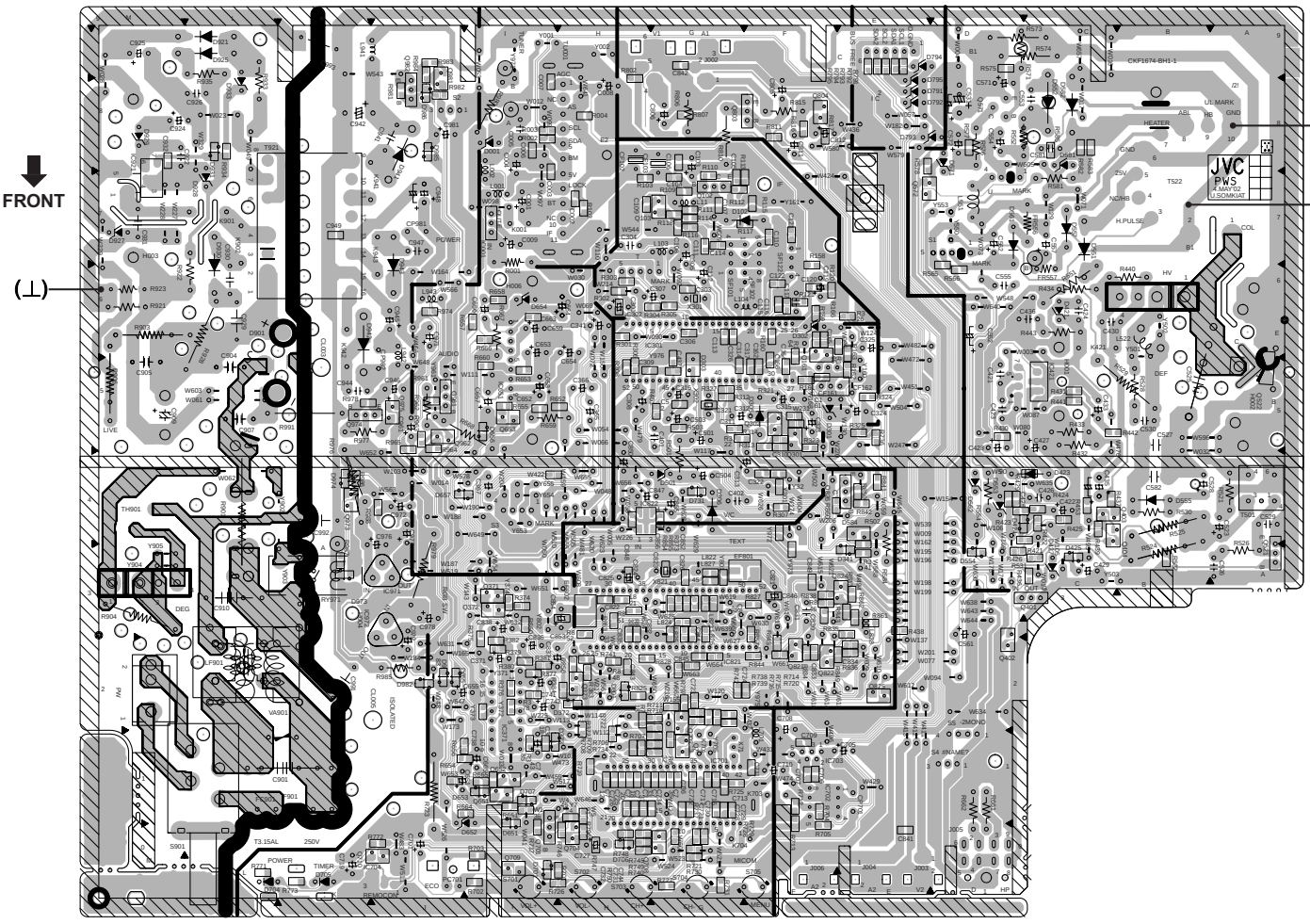
LIST(*PARTS)

*	21E3 SCG-1410A-H2
SF102	QAX0666-002
CF161	X
Q103	X
Q161	X
D102	BW
Y160	X
R112	NRSA63J-100X
R114	X
R115	X
R117	X
R118	X
R161	X
R162	X
R163	X
R164	X
R165	X
R166	X
C109	X
C161	X
C164	X
C165	X
C166	X
Y653	X
Y654	X
CN0S3	X
CN0S4	QGA2501C5-03Z
SP01	CEBSS09D-05KJ2

***MAIN PWB CIRCUIT DIAGRAMS* (2/2)**



PATTERN DIAGRAMS *MAIN PWB PATTERN*



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VICTOR COMPANY OF JAPAN, LIMITED
HOME AV NETWORK BUSINESS UNIT. 12, 3-chome, Moriya-cho, Kanagawa-ku, Yokohama, Kanagawa-prefecture, 221-8528, Japan

VP 0207
DP8080

PARTS LIST

CAUTION

- The parts identified by the ⚠ symbol are important for the safety. Whenever replacing these parts, be sure to use specified ones to secure the safety .
- The parts not indicated in this Parts List and those which are filled with lines —— in the Parts No. columns will not be supplied.
- P. W. Board Ass'y will not be supplied, but those which are filled with the Parts No. in the Parts No. columns will be supplied.

ABBREVIATIONS OF RESISTORS, CAPACITORS AND TOLERANCES

RESISTORS		CAPACITORS	
C R	Carbon Resistor	C CAP.	Ceramic Capacitor
F R	Fusible Resistor	E CAP.	Electrolytic Capacitor
P R	Plate Resistor	M CAP.	Mylar Capacitor
V R	Variable Resistor	HV CAP.	High Voltage Capacitor
HV R	High Voltage Resistor	MF CAP.	Metalized Film Capacitor
MF R	Metal Film Resistor	MM CAP.	Metalized Mylar Capacitor
MG R	Metal Glazed Resistor	MP CAP.	Metalized Polystyrol Capacitor
MP R	Metal Plate Resistor	PP CAP.	Polypropylene Capacitor
OM R	Metal Oxide Film Resistor	PS CAP.	Polystyrol Capacitor
CMF R	Coating Metal Film Resistor	TF CAP.	Thin Film Capacitor
UNF R	Non-Flammable Resistor	MPP CAP.	Metalized Polypropylene Capacitor
CH V R	Chip Variable Resistor	TAN. CAP.	Tantalum Capacitor
CH MG R	Chip Metal Glazed Resistor	CH C CAP.	Chip Ceramic Capacitor
COMP. R	Composition Resistor	BP E CAP.	Bi-Polar Electrolytic Capacitor
LPTC R	Linear Positive Temperature Coefficient Resistor	CH AL E CAP.	Chip Aluminum Electrolytic Capacitor
		CH AL BP CAP.	Chip Aluminum Bi-Polar Capacitor
		CH TAN. E CAP.	Chip Tantalum Electrolytic Capacitor
		CH AL BP E CAP.	Chip Tantalum Bi-Polar Electrolytic Capacitor

TOLERANCES									
F	G	J	K	M	N	R	H	Z	P
±1%	±2%	±5%	±10%	±20%	±30%	+30% -10%	+50% -10%	+80% -20%	+100% -0%

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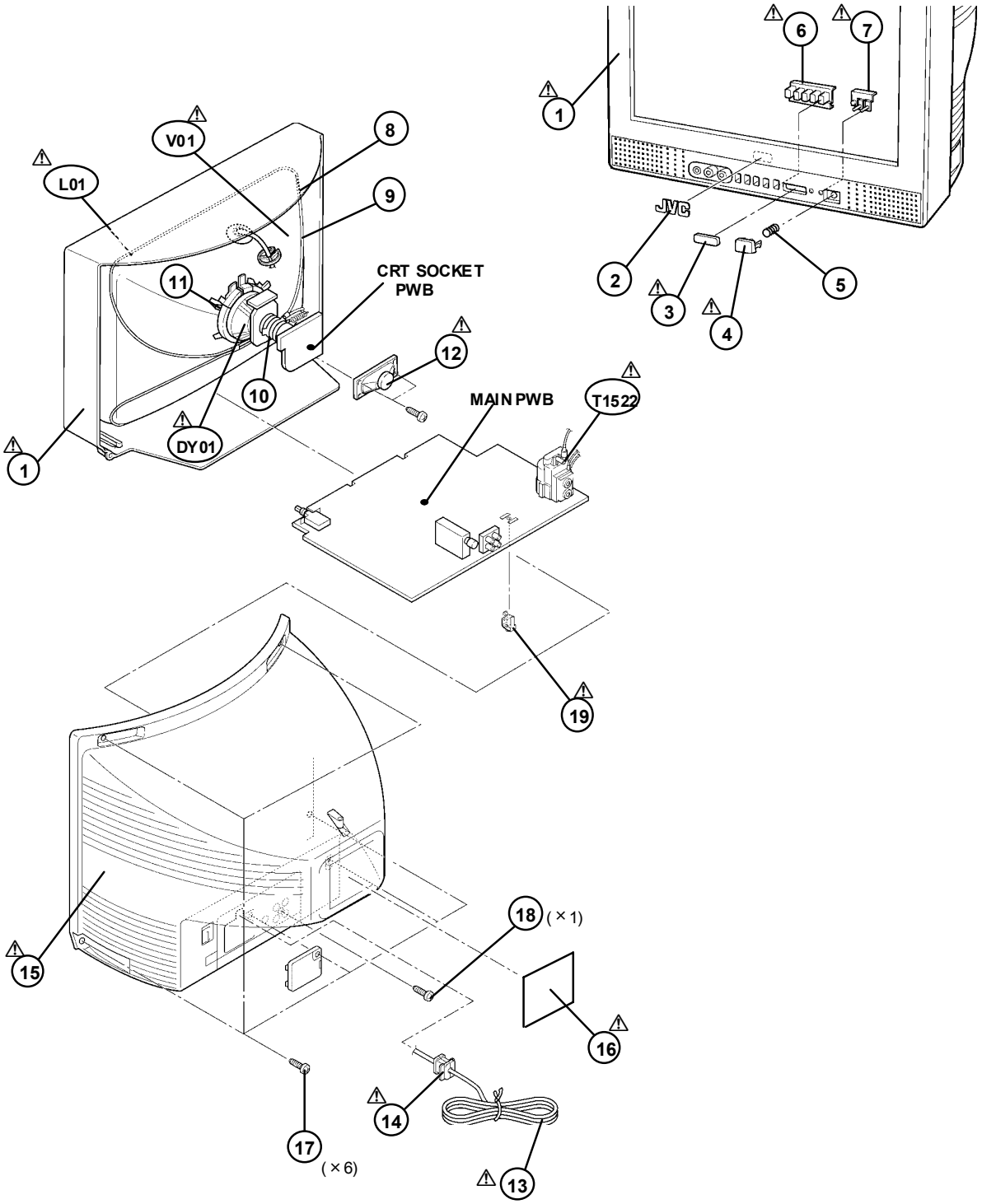
USING PW BOARD & REMOTE CONTROL UNIT

PWB ASS'Y / Model	MAIN PWB	REMOTE CONTROL UNIT
AV-21E3	SCG-1410A-H2	RM-C364GY-1H

EXPLODED VIEW PARTS LIST

⚠	Ref.No.	Part No.	Part Name	Description
⚠	V01	A51KQK99X	PICTURE TUBE	
⚠	L01	QQW0077-001	DEG COIL	or QQW0076-001
⚠	DY01	QQD0061-001	DEF YOKE	
⚠	T1522	QQH0134-001	FB TRANSF.	
⚠	1	GG10048-010A-H	FRONT CABINET	
	2	CM43094-006-H	JVC MARK	
⚠	3	GG30007-001B-C	E.E.WINDOW	
⚠	4	GG30005-001B-C	POWER KNOB	
	5	CM35235-009-H	SPRING	
⚠	6	GG20002-001B-C	CONTROL KNOB	
⚠	7	GG30006-001B-C	LED LENS	
	8	A48457-3-H	SPRING	
	9	CHGB0016-0B-FH	BRAIDED ASSY	
	10	A75034-B	PC MAGNET	or CE42378-00B
	11	CE42728-00A	WEDGE ASSY	(X3)
⚠	12	CEBSS09D-05KJ2	SPEAKER	
⚠	13	QMPR340-165-K2	POWER CORD	
⚠	14	CM23167-A01-H	POWER CORD CLAMP	
⚠	15	GG10049-002A-H	REAR COVER	
⚠	16	GG20024-001A-H	RATING LABEL	
	17	QYSBSFG4016Z	TAP SCREW	(X6)
	18	QYSBSF3010Z	TAP SCREW	(X1)
⚠	19	CM48144-002-H	PB STOPPER	

EXPLODED VIEW



PRINTED WIRING BOARD PARTS LIST

[AV-21E3]

MAIN P.W. BOARD ASS'Y (SCG-1410A-H2)

⚠	Symbol No.	Part No.	Part Name	Description
	RESISTOR			
	R1002	NRSA63J-221X	MG R	220Ω 1/16W J
	R1003	NRSA63J-221X	MG R	220Ω 1/16W J
	R1004	NRSA63J-563X	MG R	56kΩ 1/16W J
	R1102	NRSA63J-750X	MG R	75Ω 1/16W J
	R1103	NRSA63J-100X	MG R	10Ω 1/16W J
	R1109	NRSA63J-682X	MG R	6.8kΩ 1/16W J
	R1110	NRSA63J-272X	MG R	2.7kΩ 1/16W J
	R1111	NRSA63J-181X	MG R	180Ω 1/16W J
	R1112	NRSA63J-100X	MG R	10Ω 1/16W J
	R1113	NRSA63J-101X	MG R	100Ω 1/16W J
	R1120	NRSA63J-391X	MG R	390Ω 1/16W J
	R1121	NRSA63J-221X	MG R	220Ω 1/16W J
	R1159	NRSA02J-184X	MG R	180kΩ 1/10W J
	R1301	NRSA63J-221X	MG R	220Ω 1/16W J
	R1302	NRSA63J-472X	MG R	4.7kΩ 1/16W J
	R1303	NRSA63J-101X	MG R	100Ω 1/16W J
	R1304	NRSA63J-101X	MG R	100Ω 1/16W J
	R1305	NRSA63J-101X	MG R	100Ω 1/16W J
	R1306	NRSA63J-221X	MG R	220Ω 1/16W J
	R1307	NRSA63J-122X	MG R	1.2kΩ 1/16W J
	R1308	NRSA63J-182X	MG R	1.8kΩ 1/16W J
	R1312	NRSA63J-0R0X	MG R	0.0Ω 1/16W J
	R1313	NRSA63J-102X	MG R	1kΩ 1/16W J
	R1314	NRSA63J-102X	MG R	1kΩ 1/16W J
	R1321	NRSA63J-152X	MG R	1.5kΩ 1/16W J
	R1322	NRSA63J-272X	MG R	2.7kΩ 1/16W J
	R1323	NRSA63J-103X	MG R	10kΩ 1/16W J
	R1324	NRSA63J-102X	MG R	1kΩ 1/16W J
	R1326	NRSA63J-101X	MG R	100Ω 1/16W J
	R1327	NRSA02J-475X	MG R	4.7MΩ 1/10W J
	R1330	QRE141J-0R0Y	C R	0.0Ω 1/4W J
	R1341	NRSA63J-332X	MG R	3.3kΩ 1/16W J
	R1347	NRSA63J-392X	MG R	3.9kΩ 1/16W J
	R1349	NRSA63J-472X	MG R	4.7kΩ 1/16W J
	R1351	NRSA63J-151X	MG R	150Ω 1/16W J
	R1352	NRSA63J-151X	MG R	150Ω 1/16W J
	R1353	NRSA63J-151X	MG R	150Ω 1/16W J
	R1354	NRSA63J-331X	MG R	330Ω 1/16W J
	R1355	NRSA63J-331X	MG R	330Ω 1/16W J
	R1356	NRSA63J-331X	MG R	330Ω 1/16W J
	R1357	NRSA63J-101X	MG R	100Ω 1/16W J
	R1358	NRSA63J-101X	MG R	100Ω 1/16W J
	R1359	NRSA63J-101X	MG R	100Ω 1/16W J
	R1360	QRZ0107-152Z	C R	1.5kΩ 1/2W K
	R1361	QRZ0107-152Z	C R	1.5kΩ 1/2W K
	R1362	QRZ0107-152Z	C R	1.5kΩ 1/2W K
	R1363	QRL029J-123	OM R	12kΩ 2W J
	R1364	QRL029J-123	OM R	12kΩ 2W J
	R1365	QRL029J-123	OM R	12kΩ 2W J
	R1366	NRSA63J-182X	MG R	1.8kΩ 1/16W J
	R1367	NRSA63J-182X	MG R	1.8kΩ 1/16W J
	R1368	NRSA63J-182X	MG R	1.8kΩ 1/16W J
	R1372	NRSA63J-0R0X	MG R	0.0Ω 1/16W J
	R1374	NRSA63J-392X	MG R	3.9kΩ 1/16W J
	R1401	NRSA63J-103X	MG R	10kΩ 1/16W J
	R1421	NRSA63J-472X	MG R	4.7kΩ 1/16W J
	R1423	NRSA63J-0R0X	MG R	0.0Ω 1/16W J
	R1424	NRSA63J-0R0X	MG R	0.0Ω 1/16W J
	R1425	NRSA63J-332X	MG R	3.3kΩ 1/16W J
	R1426	NRSA63J-0R0X	MG R	0.0Ω 1/16W J
	R1429	NRSA63J-103X	MG R	10kΩ 1/16W J
	R1430	NRSA63J-823X	MG R	82kΩ 1/16W J
	R1431	NRSA63J-103X	MG R	10kΩ 1/16W J
	R1432	QRE121J-3R9Y	C R	3.9Ω 1/2W J
	R1433	QRE121J-2R7Y	C R	2.7Ω 1/2W J
	R1436	NRSA63J-823X	MG R	82kΩ 1/16W J
	R1437	NRSA63J-822X	MG R	8.2kΩ 1/16W J
	R1439	NRSA63J-104X	MG R	100kΩ 1/16W J
	R1440	QRE121J-471Y	C R	470Ω 1/2W J
	R1441	NRSA63J-822X	MG R	8.2kΩ 1/16W J
	R1442	NRSA63J-103X	MG R	10kΩ 1/16W J
	R1443	QRE121J-1R0Y	C R	1.0Ω 1/2W J
	R1453	NRSA63J-272X	MG R	2.7kΩ 1/16W J

⚠	Symbol No.	Part No.	Part Name	Description
	RESISTOR			
	R1502	NRSA63J-0R0X	MG R	0.0Ω 1/16W J
	R1503	NRSA63J-682X	MG R	6.8kΩ 1/16W J
	R1525	QRL029J-180	OM R	18Ω 2W J
	R1526	QRE121J-271Y	C R	270Ω 1/2W J
	R1529	QRL039J-681	OM R	680Ω 3W J
	R1531	NRSA63J-331X	MG R	330Ω 1/16W J
	R1532	NRSA63J-102X	MG R	1kΩ 1/16W J
⚠	R1551	QRZ9011-1R0	F R	1.0Ω 1/2W J
	R1552	QRJ146J-2R2X	C R	2.2Ω 1/4W J
	R1554	QRE121J-681Y	C R	680Ω 1/2W J
	R1571	QRE121J-222Y	C R	2.2kΩ 1/2W J
	R1573	QRT029J-1R5	MF R	1.5Ω 2W J
	R1574	QRT029J-1R5	MF R	1.5Ω 2W J
	R1576	QRE121J-223Y	C R	22kΩ 1/2W J
	R1577	NRSA63J-392X	MG R	3.9kΩ 1/16W J
	R1578	NRSA63J-103X	MG R	10kΩ 1/16W J
	R1581	QRE121J-182Y	C R	1.8kΩ 1/2W J
	R1582	NRSA63J-223X	MG R	22kΩ 1/16W J
	R1583	NRSA63J-393X	MG R	39kΩ 1/16W J
	R1651	NRSA63J-472X	MG R	4.7kΩ 1/16W J
	R1652	NRSA63J-102X	MG R	1kΩ 1/16W J
	R1653	NRSA63J-331X	MG R	330Ω 1/16W J
	R1654	NRSA63J-223X	MG R	22kΩ 1/16W J
	R1655	NRSA63J-473X	MG R	47kΩ 1/16W J
	R1656	NRSA63J-822X	MG R	8.2kΩ 1/16W J
	R1657	NRSA63J-222X	MG R	2.2kΩ 1/16W J
	R1658	NRSA63J-222X	MG R	2.2kΩ 1/16W J
	R1659	QRE121J-4R7Y	C R	4.7Ω 1/2W J
	R1660	NRSA63J-153X	MG R	15kΩ 1/16W J
	R1661	QRE121J-271Y	C R	270Ω 1/2W J
	R1662	QRE121J-271Y	C R	270Ω 1/2W J
	R1664	NRSA63J-682X	MG R	6.8kΩ 1/16W J
	R1665	NRSA63J-103X	MG R	10kΩ 1/16W J
	R1666	NRSA63J-101X	MG R	100Ω 1/16W J
	R1667	QRE121J-101Y	C R	100Ω 1/2W J
⚠	R1668	QRT029J-5R6	MF R	5.6Ω 2W J
	R1701	NRSA63J-562X	MG R	5.6kΩ 1/16W J
	R1702	NRSA63J-682X	MG R	6.8kΩ 1/16W J
	R1703	NRSA63J-392X	MG R	3.9kΩ 1/16W J
	R1704	NRSA63J-221X	MG R	220Ω 1/16W J
	R1705	NRSA63J-221X	MG R	220Ω 1/16W J
	R1706	NRSA63J-561X	MG R	560Ω 1/16W J
	R1707	NRSA63J-561X	MG R	560Ω 1/16W J
	R1708	NRSA63J-102X	MG R	1kΩ 1/16W J
	R1709	NRSA63J-472X	MG R	4.7kΩ 1/16W J
	R1710	NRSA63J-472X	MG R	4.7kΩ 1/16W J
	R1711	NRSA63J-472X	MG R	4.7kΩ 1/16W J
	R1712	NRSA63J-472X	MG R	4.7kΩ 1/16W J
	R1713	NRSA63J-472X	MG R	4.7kΩ 1/16W J
	R1714	NRSA63J-472X	MG R	4.7kΩ 1/16W J
	R1715	NRSA63J-221X	MG R	220Ω 1/16W J
	R1716	NRSA63J-221X	MG R	220Ω 1/16W J
	R1718	NRSA63J-561X	MG R	560Ω 1/16W J
	R1719	NRSA63J-102X	MG R	1kΩ 1/16W J
	R1720	NRSA63J-472X	MG R	4.7kΩ 1/16W J
	R1721	NRSA63J-103X	MG R	10kΩ 1/16W J
⚠	R1723	QRL039J-270	OM R	27Ω 3W J
	R1725	NRSA63J-102X	MG R	1kΩ 1/16W J
	R1726	NRSA63J-472X	MG R	4.7kΩ 1/16W J
	R1727	NRSA63J-153X	MG R	15kΩ 1/16W J
	R1728	NRSA63J-102X	MG R	1kΩ 1/16W J
	R1729	NRSA63J-102X	MG R	1kΩ 1/16W J
	R1730	NRSA63J-103X	MG R	10kΩ 1/16W J
	R1731	NRSA63J-472X	MG R	4.7kΩ 1/16W J
	R1736	NRSA63J-823X	MG R	82kΩ 1/16W J
	R1737	NRSA63J-104X	MG R	100kΩ 1/16W J
	R1738	NRSA63J-103X	MG R	10kΩ 1/16W J
	R1739	NRSA63J-103X	MG R	10kΩ 1/16W J
	R1740	NRSA63J-392X	MG R	3.9kΩ 1/16W J
	R1741	NRSA63J-561X	MG R	560Ω 1/16W J
	R1742	NRSA63J-563X	MG R	56kΩ 1/16W J
	R1746	NRSA63J-103X	MG R	10kΩ 1/16W J
	R1747	NRSA63J-0R0X	MG R	0.0Ω 1/16W J

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⚠	Symbol No.	Part No.	Part Name	Description
	RESISTOR			
	R1748	NRSA63J-101X	MG R	100Ω 1/16W J
	R1749	NRSA63J-472X	MG R	4.7kΩ 1/16W J
	R1771	NRSA63J-821X	MG R	820Ω 1/16W J
	R1772	NRSA63J-821X	MG R	820Ω 1/16W J
	R1791	NRSA63J-221X	MG R	220Ω 1/16W J
	R1792	NRSA63J-221X	MG R	220Ω 1/16W J
	R1793	NRSA63J-221X	MG R	220Ω 1/16W J
	R1794	NRSA63J-221X	MG R	220Ω 1/16W J
	R1795	NRSA63J-221X	MG R	220Ω 1/16W J
	R1796	NRSA63J-103X	MG R	10kΩ 1/16W J
	R1797	NRSA63J-153X	MG R	15kΩ 1/16W J
	R1802	NRSA63J-750X	MG R	75Ω 1/16W J
	R1806	QRE121J-271Y	C R	270Ω 1/2W J
	R1807	NRSA63J-680X	MG R	68Ω 1/16W J
	R1810	QRG01GJ-560	OM R	56Ω 1W J
	R1811	NRSA63J-221X	MG R	220Ω 1/16W J
	R1815	QRE121J-181Y	C R	180Ω 1/2W J
	R1816	NRSA63J-681X	MG R	680Ω 1/16W J
	R1817	NRSA63J-472X	MG R	4.7kΩ 1/16W J
	R1901	QRF104K-3R9	UNF R	3.9Ω 10W K
	R1903	QRL029J-104	OM R	100kΩ 2W J
	R1904	QRL039J-151	OM R	150Ω 3W J
	R1906	QRL029J-104	OM R	100kΩ 2W J
	R1921	QRE121J-2R2Y	C R	2.2Ω 1/2W J
	R1922	QRE121J-221Y	C R	220Ω 1/2W J
	R1923	QRM034J-R22	MP R	0.22Ω 3W J
	R1928	QRL039J-683	OM R	68kΩ 3W J
	R1933	QRE121J-4R7Y	C R	4.7Ω 1/2W J
	R1934	NRSA63J-683X	MG R	68kΩ 1/16W J
	R1935	QRE121J-392Y	C R	3.6kΩ 1/2W J
	R1974	NRSA63J-222X	MG R	2.2kΩ 1/16W J
	R1976	QRT029J-8R2	MF R	8.2Ω 2W J
	R1977	QRE121J-122Y	C R	1.2kΩ 1/2W J
	R1978	NRSA63J-473X	MG R	47kΩ 1/16W J
	R1979	QRL039J-220	OM R	22Ω 3W J
	R1980	QRL029J-152	OM R	1.5kΩ 2W J
⚠	R1991	QRZ9046-825Z	C R	8.2MΩ 1/2W K
	CAPACITOR			
	C1001	QETN1HM-106Z	E CAP.	10μF 50V M
	C1002	NCB31HK-103X	C CAP.	0.01μF 50V K
	C1004	QETN1CM-477Z	E CAP.	470μF 16V M
	C1005	QFV71HJ-104Z	MF CAP.	0.1μF 50V J
	C1008	QETN1HM-475Z	E CAP.	4.7μF 50V M
	C1103	QETN1EM-476Z	E CAP.	47μF 25V M
	C1104	NCB31HK-472X	C CAP.	4700pF 50V K
	C1105	NCB31HK-472X	C CAP.	4700pF 50V K
	C1106	NCB31HK-472X	C CAP.	4700pF 50V K
	C1107	NCB31HK-472X	C CAP.	4700pF 50V K
	C1110	NRSA63J-0R0X	MG R	0.0Ω 1/16W J
	C1112	QETN1EM-476Z	E CAP.	47μF 25V M
	C1113	NCB31HK-472X	C CAP.	4700pF 50V K
	C1114	NCB31HK-103X	C CAP.	0.01μF 50V K
	C1115	NCB31HK-103X	C CAP.	0.01μF 50V K
	C1116	NCB31HK-103X	C CAP.	0.01μF 50V K
	C1117	QFV71HJ-224Z	MF CAP.	0.22μF 50V J
	C1119	QETN1HM-474Z	E CAP.	0.47μF 50V M
	C1120	NDC31HJ-121X	C CAP.	120pF 50V J
	C1121	NCB31HK-103X	C CAP.	0.01μF 50V K
	C1122	NCB31HK-103X	C CAP.	0.01μF 50V K
	C1162	NCB31HK-152X	C CAP.	1500pF 50V K
	C1301	NCB31HK-123X	C CAP.	0.012μF 50V K
	C1302	QETN1HM-475Z	E CAP.	4.7μF 50V M
	C1303	NDC31HJ-100X	C CAP.	10pF 50V J
	C1304	QFV71HJ-474Z	MF CAP.	0.47μF 50V J
	C1305	QETN1HM-474Z	E CAP.	0.47μF 50V M
	C1306	NCB31HK-103X	C CAP.	0.01μF 50V K
	C1307	QETN1CM-477Z	E CAP.	470μF 16V M
	C1308	QETN1CM-107Z	E CAP.	100μF 16V M
	C1309	NCB31HK-103X	C CAP.	0.01μF 50V K
	C1310	NDC31HJ-221X	C CAP.	220pF 50V J
	C1311	NCB31HK-103X	C CAP.	0.01μF 50V K
	C1312	QENC1HM-474Z	E CAP.	0.47μF 50V M
	C1313	QETN1HM-335Z	E CAP.	3.3μF 50V M
	C1314	NCB31HK-103X	C CAP.	0.01μF 50V K
	C1315	QETN1CM-107Z	E CAP.	100μF 16V M

⚠	Symbol No.	Part No.	Part Name	Description
	CAPACITOR			
	C1315	QETN1CM-107Z	E CAP.	100μF 16V M
	C1316	QETN1HM-106Z	E CAP.	10μF 50V M
	C1317	NCB31EK-473X	C CAP.	0.047μF 25V K
	C1321	NDC31HJ-120X	C CAP.	12pF 50V J
	C1322	NCB31EK-273X	C CAP.	0.027μF 25V K
	C1323	QETN1HM-474Z	E CAP.	0.47μF 50V M
	C1324	QETN1HM-106Z	E CAP.	10μF 50V M
	C1325	QENC1HM-106Z	BP E CAP.	10μF 50V M
	C1326	NCS21HJ-221X	C CAP.	220pF 50V J
	C1341	QETN1HM-106Z	E CAP.	10μF 50V M
	C1352	QFZ0097-103	MM CAP.	0.01μF 1250V K
	C1354	NDC31HJ-271X	C CAP.	270pF 50V J
	C1355	NDC31HJ-221X	C CAP.	220pF 50V J
	C1356	NDC31HJ-331X	C CAP.	330pF 50V J
	C1357	QETN1AM-477Z	E CAP.	470μF 10V M
	C1365	QENC1HM-105Z	E CAP.	1μF 50V M
	C1366	QENC1HM-105Z	E CAP.	1μF 50V M
	C1367	QENC1HM-105Z	E CAP.	1μF 50V M
	C1401	QFV71HJ-474Z	MF CAP.	0.47μF 50V J
	C1423	QCS32HJ-180Z	C CAP.	18pF 500V J
	C1424	QFLC2AJ-103Z	M CAP.	0.01μF 100V J
	C1426	QFLC1HJ-102Z	M CAP.	1000pF 50V J
	C1427	QETN1VM-107Z	E CAP.	100μF 35V M
	C1428	QETN1VM-107Z	E CAP.	100μF 35V M
	C1429	QETN1HM-106Z	E CAP.	10μF 50V M
	C1430	QFLC2AJ-472Z	M CAP.	4700pF 100V J
	C1433	QETN1HM-475Z	E CAP.	4.7μF 50V M
	C1435	QETM1EM-228	E CAP.	2200μF 25V M
	C1436	QFV71HJ-334Z	MF CAP.	0.33μF 50V J
	C1437	NCB31HK-104X	C CAP.	0.1μF 50V K
	C1501	QETN1AM-477Z	E CAP.	470μF 10V M
	C1502	NCB31HK-103X	C CAP.	0.01μF 50V K
	C1503	QETN1HM-106Z	E CAP.	10μF 50V M
	C1523	QETN1EM-476Z	E CAP.	47μF 25V M
⚠	C1525	QFZ0200-942	MPP CAP.	9400pF1.5kVH±3%
	C1526	QFLC1HJ-103Z	M CAP.	0.01μF 50V J
⚠	C1527	QFZ0199-374	MPP CAP.	0.37μF 250V J
	C1529	QFLC2AJ-102Z	M CAP.	1000pF 100V J
	C1531	QEZ0203-107	E CAP.	100μF 160V M
	C1552	QETM1VM-108	E CAP.	1000μF 35V M
	C1554	QETN2EM-475Z	E CAP.	4.7μF 250V M
	C1555	QFLC2AJ-104Z	M CAP.	0.1μF 100V J
	C1557	QETN1HM-107Z	E CAP.	100μF 50V M
	C1571	QETN1AM-107Z	E CAP.	100μF 10V M
	C1572	QETN1EM-476Z	E CAP.	47μF 25V M
	C1581	QFV71HJ-104Z	MF CAP.	0.1μF 50V J
	C1652	NCB31HK-473X	C CAP.	0.047μF 50V K
	C1653	QETN1HM-106Z	E CAP.	10μF 50V M
	C1654	QETN1CM-477Z	E CAP.	470μF 16V M
	C1655	QETN1HM-106Z	E CAP.	10μF 50V M
	C1656	QENC1HM-105Z	E CAP.	1μF 50V M
	C1657	QETN1EM-107Z	E CAP.	100μF 25V M
	C1658	QETN1EM-227Z	E CAP.	220μF 25V M
	C1659	QETN1HM-475Z	E CAP.	4.7μF 50V M
	C1663	NCB31HK-102X	C CAP.	1000pF 50V K
	C1664	QETN1CM-107Z	E CAP.	100μF 16V M
	C1665	NCB31HK-103X	C CAP.	0.01μF 50V K
	C1701	QETN1HM-106Z	E CAP.	10μF 50V M
	C1705	QETN1CM-477Z	E CAP.	470μF 16V M
	C1706	NCB31HK-104X	C CAP.	0.1μF 50V K
	C1707	NCB31HK-103X	C CAP.	0.01μF 50V K
	C1708	QETN1AM-108Z	E CAP.	1000μF 10V M
	C1709	NCB31HK-103X	C CAP.	0.01μF 50V K
	C1710	QETN1CM-107Z	E CAP.	100μF 16V M
	C1711	NCB31HK-103X	C CAP.	0.01μF 50V K
	C1712	NCB31HK-103X	C CAP.	0.01μF 50V K
	C1713	NCB31HK-103X	C CAP.	0.01μF 50V K
	C1716	NDC31HJ-181X	C CAP.	180pF 50V J
	C1717	NDC31HJ-181X	C CAP.	180pF 50V J
	C1718	NCB31HK-103X	C CAP.	0.01μF 50V K
	C1719	QETN1HM-105Z	E CAP.	1μF 50V M
	C1720	NCB31HK-103X	C CAP.	0.01μF 50V K
	C1721	NCB31EK-333X	C CAP.	0.033μF 25V K
	C1722	NDC31HJ-101X	C CAP.	100pF 50V J
	C1724	NDC31HJ-560X	C CAP.	56pF 50V J
	C1728	NDC31HJ-181X	C CAP.	180pF 50V J
	C1729	NDC31HJ-181X	C CAP.	180pF 50V J
	C1730	NCB31HK-103X	C CAP.	0.01μF 50V K

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CAPACITOR

⚠	Symbol No.	Part No.	Part Name	Description
	C1741	QETN1HM-106Z	E CAP.	10µF 50V M
	C1743	QETN1HM-106Z	E CAP.	10µF 50V M
	C1744	NCB31HK-103X	C CAP.	0.01µF 50V K
	C1805	QETN1CM-227Z	E CAP.	220µF 16V M
	C1806	QETN1CM-477Z	E CAP.	470µF 16V M
	C1811	QETN1HM-106Z	E CAP.	10µF 50V M
	C1841	NCB31HK-152X	C CAP.	1500pF 50V K
⚠	C1901	QFZ9078-224	MPF CAP.	0.22µFAC275V M
⚠	C1904	QCZ9015-102	C CAP.	1000pFAC250V Z
⚠	C1905	QCZ9015-102	C CAP.	1000pFAC250V Z
⚠	C1907	QCZ9015-102	C CAP.	1000pFAC250V Z
⚠	C1909	QEZ0552-127	E CAP. or QEZ0199-127	120µF 400V M
⚠	C1910	QFZ9078-473	MPF CAP.	0.047µFAC275V M
	C1922	QFLC1HJ-104Z	M CAP.	0.1µF 50V J
	C1924	QETN1HM-475Z	E CAP.	4.7µF 50V M
	C1925	QETN1VM-476Z	E CAP.	47µF 35V M
	C1926	QFLC1HJ-332Z	M CAP.	3300pF 50V J
⚠	C1929	QFKA2JK-103	MM CAP.	0.01µF 630V K
⚠	C1931	QCZ0364-681	C CAP.	680pF 2kV K
	C1932	NDC31HJ-221X	C CAP.	220pF 50V J
	C1941	QCZ0364-561	C CAP.	560pF 2kV K
	C1942	QEZ0203-107	E CAP.	100µF 160V M
	C1944	QCB32HK-222Z	C CAP.	2200pF 500V K
	C1945	QEHR1EM-108Z	E CAP.	1000µF 25V M
	C1946	QETN1EM-108Z	E CAP.	1000µF 25V M
	C1947	QCB32HK-222Z	C CAP.	2200pF 500V K
	C1948	QETN1EM-108Z	E CAP.	1000µF 25V M
	C1949	NDC31HJ-471X	C CAP.	470pF 50V J
	C1976	QETN1EM-227Z	E CAP.	220µF 25V M
	C1977	QETN1CM-227Z	E CAP.	220µF 16V M
	C1978	QETN1EM-227Z	E CAP.	220µF 25V M
	C1979	QETN1AM-227Z	E CAP.	220µF 10V M
⚠	C1991	QCZ9079-102	C CAP.	1000pFAC250V M
⚠	C1992	QCZ9079-102	C CAP.	1000pFAC250V M
⚠	C1993	QCZ9079-222	C CAP.	2200pFAC250V M

TRANSFORMER

⚠	Symbol No.	Part No.	Part Name
	T1501	QQR1244-001	DRIVE TRANSF
⚠	T1522	QQH0134-001	FB TRANSF
⚠	T1921	QQS0161-001	SW TRANSF

COIL

⚠	Symbol No.	Part No.	Part Name	Description
	L1001	QQL244K-8R2Z	COIL	8.2µH K
	L1101	QQL244J-2R2Z	COIL	2.2µH J
	L1103	QQL244K-8R2Z	COIL	8.2µH K
	L1551	QQLZ034-360	INDUCTOR	
	L1701	QQL244J-5R6Z	COIL	5.6µH J
	L1941	QQL26AK-820Z	COIL	82µH K
	L1942	QQL244J-4R7Z	INDUCTOR	
	L1943	QQL244J-4R7Z	INDUCTOR	

DIODE

⚠	Symbol No.	Part No.	Part Name	Description
	D1001	MTZJ33A-T2	Z DIODE	
	D1301	MTZJ9.1B-T2	Z DIODE	
	D1302	MTZJ9.1B-T2	Z DIODE	
	D1305	AK04-T2	SB DIODE	
	D1306	QRE121J-121Y	C R	120Ω 1/2W J
	D1341	MA111-X	SI DIODE	
	D1421	MTZJ75-T2	Z DIODE	
	D1423	1SR124-400A-T2	SI DIODE	
	D1425	MA111-X	SI DIODE	
	D1427	MTZJ27B-T2	Z DIODE	
	D1501	MTZJ6.8C-T2	Z DIODE	
	D1551	RGP10J-5025-T3	SI DIODE	
	D1552	RGP10J-5025-T3	SI DIODE	
	D1553	MTZJ9.1B-T2	Z DIODE	
	D1554	MA111-X	SI DIODE	
	D1557	1SR124-400A-T2	SI DIODE	
	D1571	MTZJ7.5S-T2	Z DIODE	
	D1581	MTZJ20B-T2	Z DIODE	
	D1582	RGP10J-5025-T3	SI DIODE	
	D1651	MA111-X	SI DIODE	
	D1652	MTZJ12C-T2	Z DIODE	
	D1653	MA111-X	SI DIODE	

DIODE

⚠	Symbol No.	Part No.	Part Name	Description
	D1654	MTZJ12C-T2	Z DIODE	
	D1655	MA111-X	SI DIODE	
	D1656	MA111-X	SI DIODE	
	D1657	MA111-X	SI DIODE	
	D1701	MA111-X	SI DIODE	
	D1704	SLR-342VR-T16	LED	
	D1705	SLR-342DU-T16	LED	
	D1707	MA111-X	SI DIODE	
	D1731	MA111-X	SI DIODE	
⚠	D1901	G2SBA60	BRIDGE DIODE	
	D1921	RGP10J-5025-T3	SI DIODE	
	D1925	RGP10J-5025-T3	SI DIODE	
	D1927	MTZJ36A-T2	Z DIODE	
	D1928	MTZJ3.3A-T2	Z DIODE	
	D1929	QRE141J-154Y	C RESISTOR	
	D1930	RGP10M-5010-T3	SI DIODE	
	D1931	MA111-X	SI DIODE	
	D1933	MTZJ16C-T2	Z DIODE	
	D1941	RU3AM-LFC4	SI DIODE	
	D1942	RU3YX-LFC4	SI DIODE	
	D1943	RGP10J-5025-T3	SI DIODE	
	D1982	MA111-X	SI DIODE	
	D1983	MA111-X	SI DIODE	

TRANSISTOR

⚠	Symbol No.	Part No.	Part Name	Description
	Q1102	2SC5083/L-P/-T	TRANSISTOR	
	Q1301	2SB709A/QR/-X	TRANSISTOR	
	Q1302	2SD601A/QR/-X	TRANSISTOR	
	Q1351	STC344-T	TRANSISTOR	
	Q1352	STC344-T	TRANSISTOR	
	Q1353	STC344-T	TRANSISTOR	
	Q1401	DTC124ESA-T	DIGI TRANSISTOR	
	Q1402	2SD601A/QR/-X	TRANSISTOR	
	Q1403	2SD601A/QR/-X	TRANSISTOR	
	Q1521	2SC2655/Y/-T	TRANSISTOR	
⚠	Q1522	2SD2627-YB11	POW TRANSISTOR	H.OUT
	Q1571	2SA1208/ST/Z1-T	TRANSISTOR	
	Q1572	2SD601A/QR/-X	TRANSISTOR	
	Q1651	2SD601A/QR/-X	TRANSISTOR	
	Q1652	2SD601A/QR/-X	TRANSISTOR	
	Q1653	2SB709A/QR/-X	TRANSISTOR	
	Q1702	2SD601A/QR/-X	TRANSISTOR	
	Q1703	2SD601A/QR/-X	TRANSISTOR	
	Q1708	UN2212-X	DIGI TRANSISTOR	
	Q1709	2SB709A/QR/-X	TRANSISTOR	
	Q1803	2SC1815/YG/-T	TRANSISTOR	
	Q1804	2SD601A/QR/-X	TRANSISTOR	
	Q1974	2SA966/OY/-T	TRANSISTOR	
	Q1975	UN2212-X	DIGI TRANSISTOR	

IC

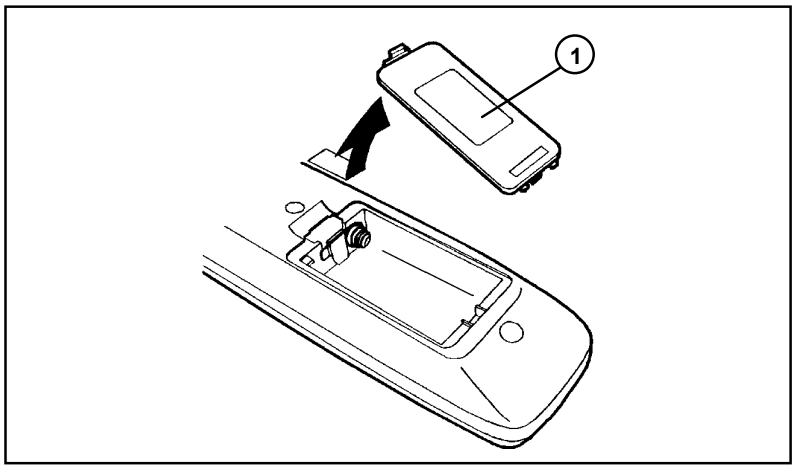
⚠	Symbol No.	Part No.	Part Name	Description
	IC1301	NN5198K	I C	
	IC1421	AN5522	I C	
	IC1651	AN5265	I C	
⚠	IC1701	MN1873287JJ1	I C(MCU)	
	IC1702	AT24C08-21DMG3	I C	(SERVICE)
	IC1703	L78LR05E-MA	I C	
	IC1704	PIC-47143SY	IR DETECT UNIT	
	IC1921	STR-W5753A/F5	I C	
	IC1971	BA17809T	I C	
	IC1972	BA17805T	I C	

[AV-21E3]

⚠	Symbol No.	Part No.	Part Name	Description
	OTHERS			
		LC30114-001C-H	LED HOLDER	
		CM35921-B02	CDS HOLDER	
⚠	CP1981	ICP-N25-Y	IC PROTECTOR	
⚠	CP1982	ICP-N75-Y	IC PROTECTOR	
⚠	F1901	QMF51E2-3R15J4	FUSE	3.15A
	FC1901	CEMG002-001Z	FUSE CLIP	
	FR1557	QRJ146J-2R2X	C R	2.2Ω 1/4W J
	J1002	QNN0384-001	PIN JACK	
	J1003	QNN0281-003	PIN JACK	or CEMN065-001
	J1004	QNN0281-002	PIN JACK	or CEMN065-002
⚠	J1005	QNS0197-001	3.5 JACK	
	K1351	QQR0621-002Z	FERRITE BEADS	
	K1421	QQR1113-001Z	FERRITE BEADS	
	K1901	QQR1113-001Z	FERRITE BEADS	
	K1902	QQR1113-001Z	FERRITE BEADS	
	K1941	QQR1113-001Z	FERRITE BEADS	
	K1942	QQR1113-001Z	FERRITE BEADS	
	K1943	QQR1113-001Z	FERRITE BEADS	
⚠	LF1901	QQR0527-002	LINE FILTER	
	PC1701	P1241-04	PHOTO CONDUCTOR	
	S1701	QSW0619-003Z	TACT SWITCH	VOL+
	S1702	QSW0619-003Z	TACT SWITCH	VOL-
	S1703	QSW0619-003Z	TACT SWITCH	CH+
	S1704	QSW0619-003Z	TACT SWITCH	CH-
	S1705	QSW0619-003Z	TACT SWITCH	MENU
⚠	S1901	QSW0750-001	PUSH SWITCH	POWER SW
	SF1102	QAX0666-002	SAW FILTER	
	SF1122	QAX0325-001	SAW FILTER	
⚠	SK1351	QNZ0537-001	CRT SOCKET	or QNZ0536-001
⚠	TH1901	QAD0121-9R0	P THERMISTOR	or QAD0119-9R0
⚠	TU1001	QAU0282-001	TUNER	
⚠	VA1901	ERZV10V621CS	ZNR	or QAF0052-621
⚠	X1301	QAX0705-001Z	CRYSTAL	
	X1302	CE41651-001Z	X-TAL	
	X1701	QAX0307-001	C RESONATOR	

REMOTE CONTROL UNIT PARTS LIST (RM-C364GY-1H)

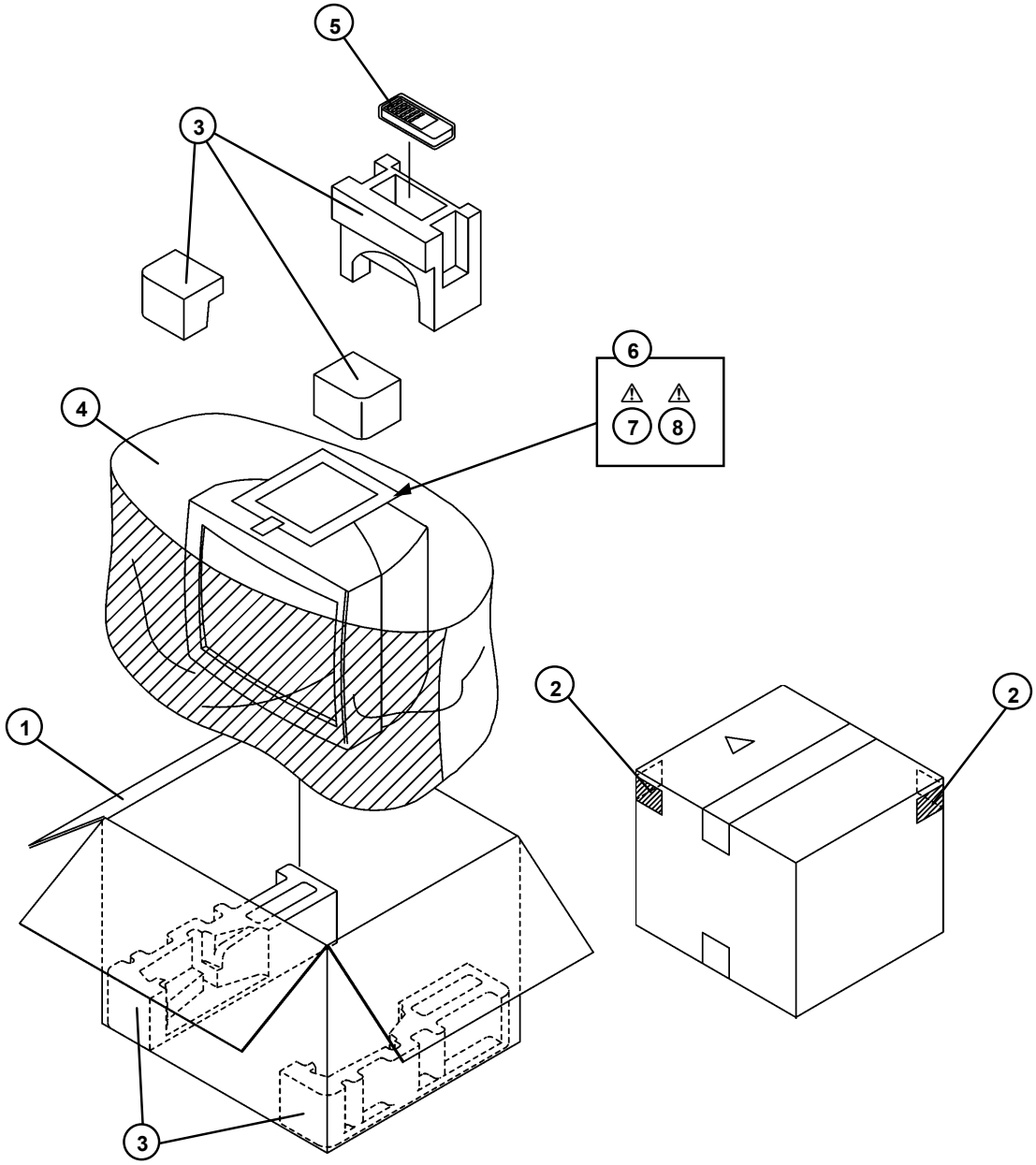
⚠ Ref.No.	Part No.	Part Name.	Description
1	25-1168F	BATTERY COVER	



PACKING PARTS LIST

⚠	Ref.No.	Part No.	Part Name	Description
	1	GG10056-072A-H	PACKING CASE	
	2	GG20025-001A-H	CORNER LABEL	2pcs in 1set
	3	GG10117-002A-H	CUSHION ASSY	5pcs in 1set
	4	CP30967-003-H	POLY BAG	or CP30967-005-H
	5	RM-C364GY-1H	REMOCON UNIT	
	6	CP30966-001-H	POLY BAG	
⚠	7	LCT1188-001A-H	INST BOOK	
⚠	8	LCT1189-001A-H	DIGEST MANUAL	

PACKING



JVC
VICTOR COMPANY OF JAPAN, LIMITED
HOME AV NETWORK BUSINESS UNIT 12, 3-chome, Moriya-cho, Kanagawa-ku, Yokohama, Kanagawa-prefecture, 221-8528, Japan

AV21E3-H VP 0207
DP7059

VC

R TELEVISION

RUCTIONS

or buying this JVC
sion.
e you understand how to
v TV, please read this
oughly before you begin.

A3
F3
35
38
N3
D3
E3
F3
FR3
LT3
LTR3
Q3

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LCT1188-001A-H
0502-Ki-NIC-JMT

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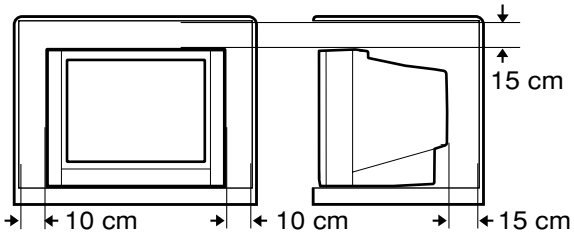
Safety precautions

WARNING

• To prevent fire or shock hazard, do not expose the TV to rain or moisture.

CAUTION

- Operate only from the power source indicated on the rear of the TV.
- Avoid damaging the power cord and mains plug. When you unplug the TV, pull it out by the mains plug. Do not pull on the power cord.
- Never block or cover the cabinet openings for ventilation. Never install the TV where good ventilation is unattainable. When installing this TV, leave spaces for ventilation around the TV more than the minimum distances shown in the diagram.



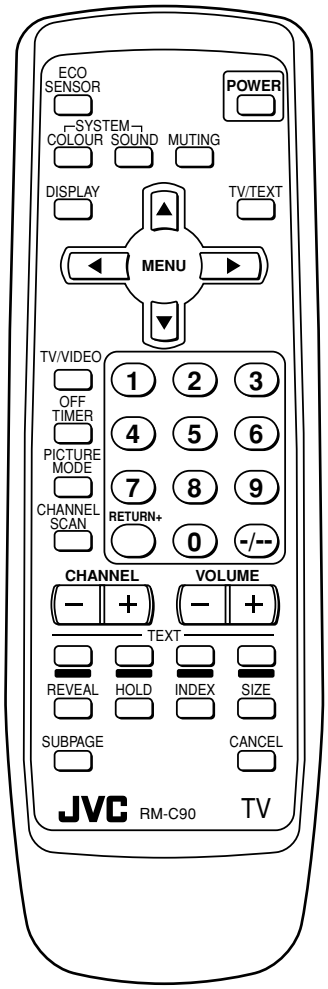
- Do not allow objects or liquid into the cabinet openings.
- In the event of a fault, unplug the TV and call a service technician. Do not attempt to repair it by yourself or remove the rear cover.
- The surface of the TV screen is easily damaged. Be very careful with it when handling the TV. Should the TV screen become soiled, wipe it with a soft dry cloth. Never rub it forcefully. Never use any cleaner or detergent on it.
- When you don't use this TV for a long period of time, be sure to unplug it.

Preparation

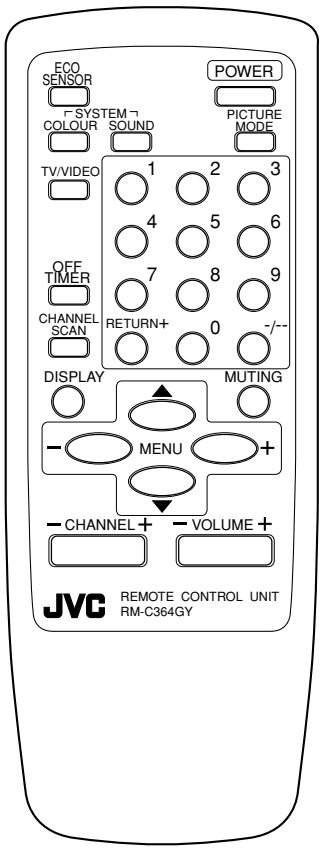
1 Confirm which remote control you have

Your TV comes with one of the three remote controls shown below. Functions you can operate differ depending on the type of remote control.

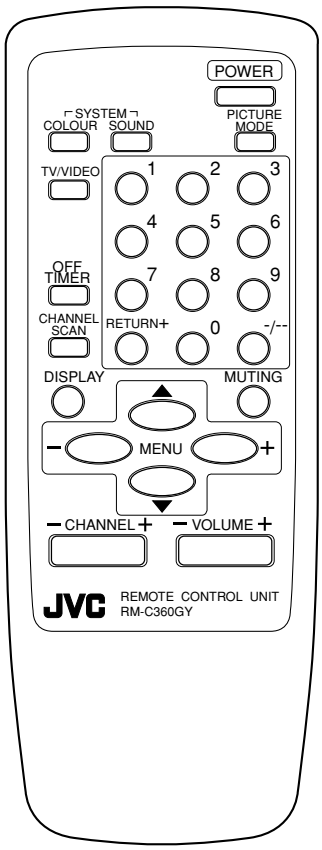
RM-C90



RM-C364GY

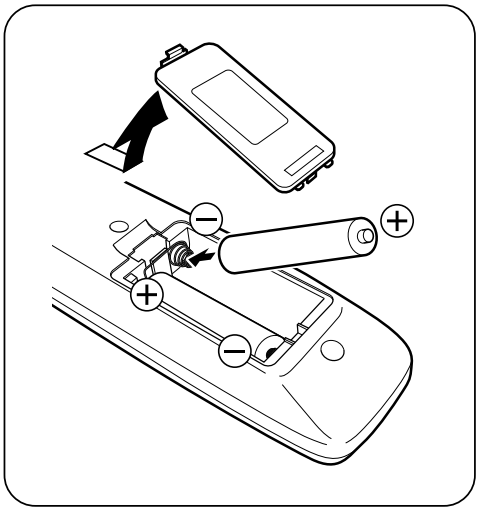


RM-C360GY



2 Inserting the batteries

Correctly insert two batteries, observing the ⊕ and ⊖ polarities and inserting the ⊖ end first.



CAUTION:
Follow the cautions printed on the batteries.

Notes:

- Use AA/R6/UM-3 dry cell batteries.
- If the remote control does not work properly, fit new batteries.
  The supplied batteries are for testing, not regular use.

3 Connecting the aerial and external devices

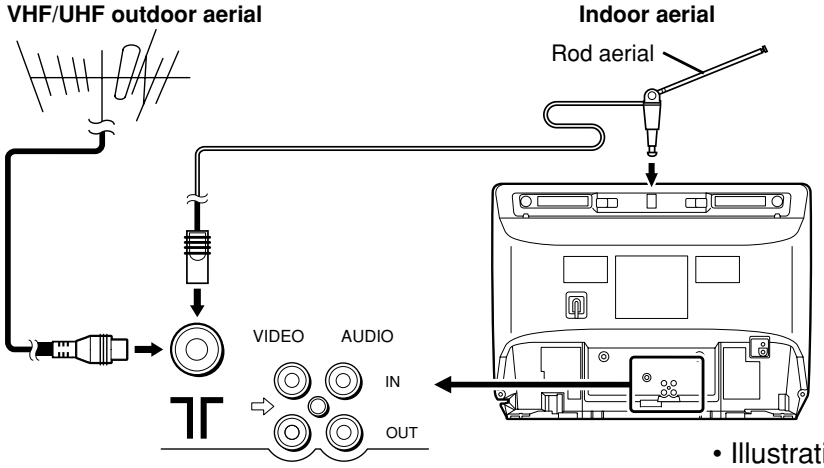
- For further details, refer to the manuals provided with the devices you are connecting.
- Connecting cables are not supplied.
- The front and rear AUDIO/VIDEO input jacks are directly connected so that input to either jack is output through both. You cannot provide input to both the front and rear jacks at the same time. Disconnect one input, or use one of the jacks as an output jack only (for monitoring or recording).
- The rod aerial is supplied with the AV-14A3/AV-14F3/AV-1435/AV-1438.

■ Connecting the aerial and VCR

Connecting the aerial

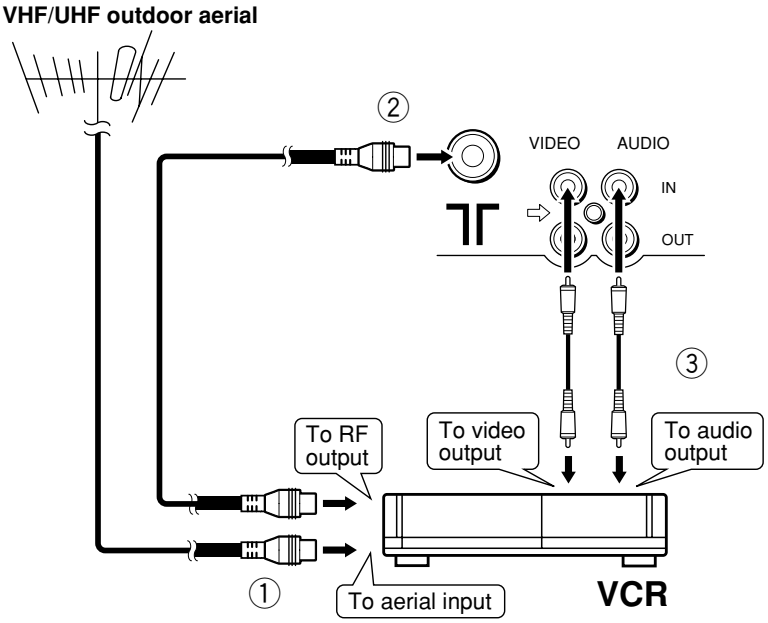
To install rod aerial:

Install into the top-rear aerial holder. Once installed, it cannot be removed.



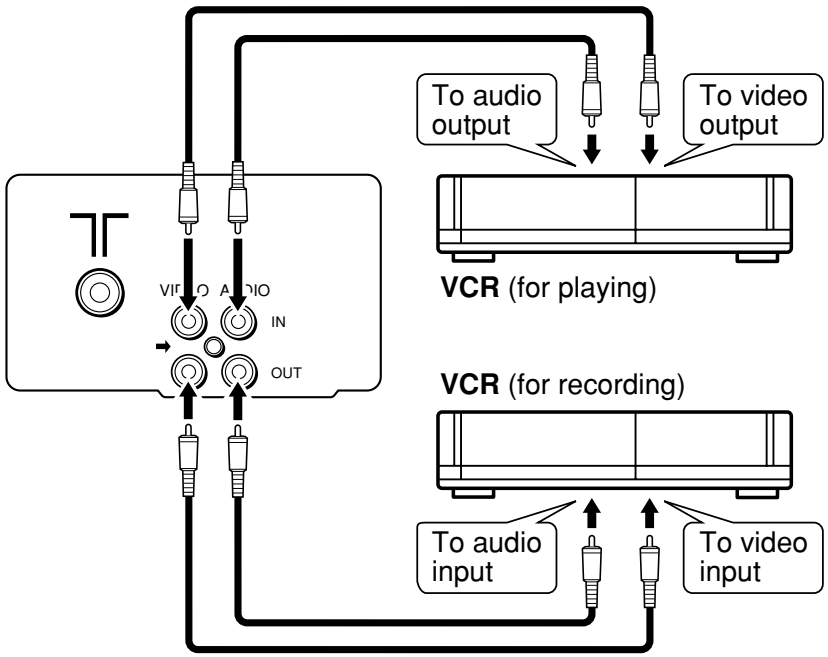
• Illustration of AV-14F3.

Connecting the aerial and VCR

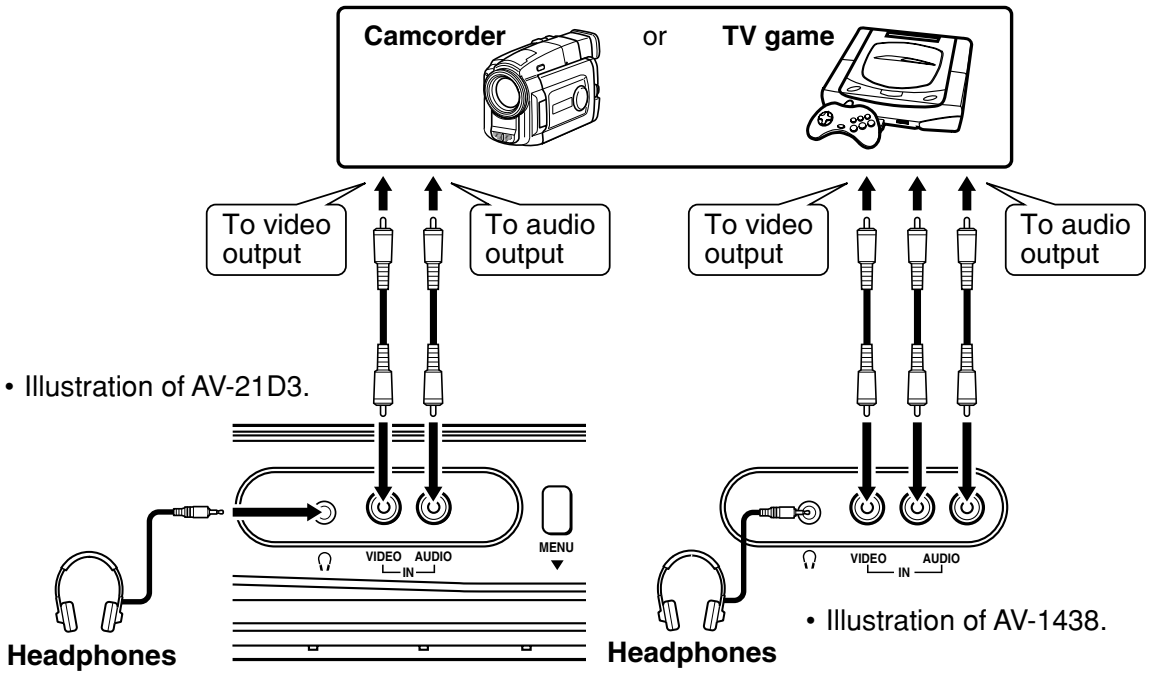


• Illustration of AV-14F3.

■ Connecting other external devices



• Illustration of AV-21D3.



• Use the headphones with a stereo mini jack (3.5 mm in diameter). When you connect the headphones, the TV speakers go off.

For AV-1438:

• Because the front AUDIO jacks are monaural, even stereo input becomes monaural.

4 Connecting the power cord

Connect the power cord to the AC outlet.
Operate only from the power source indicated on the rear of the TV.

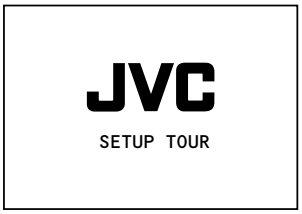
5 SETUP TOUR

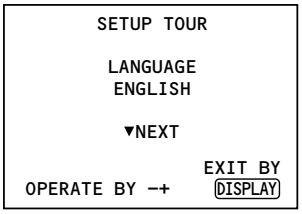
When the TV is first turned on it enters the SETUP TOUR mode, and the JVC logo is displayed. Follow the instructions on the on-screen display to perform the SETUP TOUR.

- In case of resetting that the reason for such as removal, you can set the SETUP TOUR function on the "MENU 3" menu. For details, see page 16.

1 Press the Main power button on the TV.

The POWER lamp or POWER/ON TIMER lamp lights. After the JVC logo has been displayed, the TV automatically switches to the language setting mode.

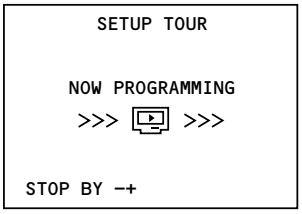


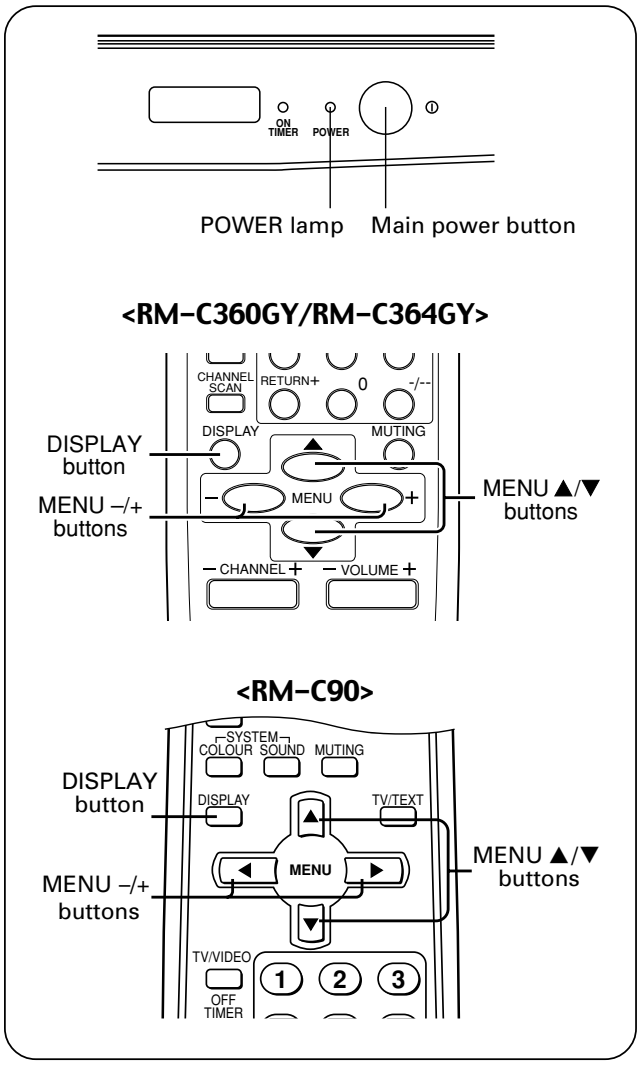


2 Press the MENU –/+ buttons to select the on-screen language.

3 Press the MENU ▼ button.

The AUTO PROGRAMMING function will start and the indicator blinks.





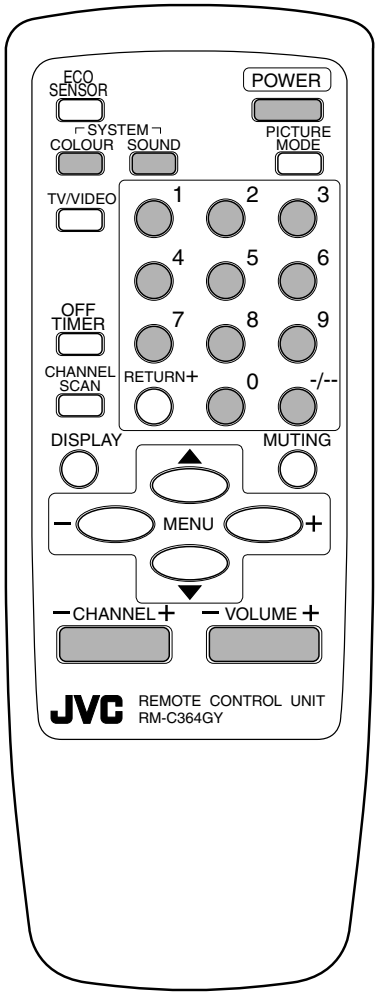
- To stop the AUTO PROGRAMMING function, press the MENU –/+ buttons.

When all the TV channels that can be received on your TV have been preset, the display goes out and the AUTO PROGRAMMING function operation is completed.

- If a TV channel you want to view is not set to the channel, set it with the MANUAL CH PRESET function. For details, see page 17.

Basic operation

• The illustration below is for the remote control RM-C364GY. Your remote control may not look exactly like the illustrations.



1 Press the POWER button to turn your TV on.

• If your TV does not turn on, press the Main power button on the TV then press the POWER button again.

• You can also turn on your TV by pressing any of the following buttons;

- the CHANNEL –/+ button
- the Number buttons
- the TV/VIDEO button

2 Select a channel.

■ Press the CHANNEL –/+ button.

• Up/down selection cannot be selected for channels to which the SKIP has been set to “YES”. See page 18.

■ Press the Number buttons to enter the channel number.

• If you want to enter a two-digit number, press the -/-- button to select the two digit mode “--”, then enter the channel number.

3 Press the VOLUME –/+ button to adjust the sound.

4 To turn your TV off, press the POWER button.

• We recommend that you press the Main power button on the TV to turn the main power off if you do not plan to use your TV for a long time or if you wish to save energy.

If the picture is not clear:
Press the COLOUR SYSTEM button to select another colour system, see page 8.

If the sound is not clear:
Press the SOUND SYSTEM button to select another sound system, see page 8.

Viewing Images from an External Device:
Press the TV/VIDEO button to select the VIDEO mode.

• You can also use the INPUT function to select the VIDEO mode. For details, refer to page 13.

Remote control buttons and functions

ECO SENSOR button

< AV-14A3 does not have this function >

You can adjust this TV so that the screen automatically adjusts to the optimum contrast according to the brightness of your room. This function reduces eye strain and the power consumption of this TV.

Press this button to select the desired mode.

AI ECO SENSOR 1:
The AI ECO SENSOR function switches on.
Usually, it is recommended to watch the TV in this mode.

AI ECO SENSOR 2:
The AI ECO SENSOR function switches on.
If you feel the screen in the "AI ECO SENSOR 1" mode is too dark, select this mode.

AI ECO SENSOR OFF:
The AI ECO SENSOR function switches off.

- You can display on the screen the effect of the AI ECO SENSOR function.
  For details, see "AI ECO DISPLAY" on page 15.

PICTURE MODE button

You can select one of three picture adjustment settings as you like.

Press this button to select a mode.

BRIGHT:
Heightens contrast and sharpness.

STANDARD:
Standardizes picture adjustments.

SOFT:
Softens contrast and sharpness.

- Pressing this button returns all the picture settings in the "MENU 4" to their default settings.

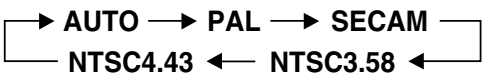
COLOUR SYSTEM button

If the picture is not clear or no colour appears, change the current colour system to another colour system.

Press this button to select the colour system.

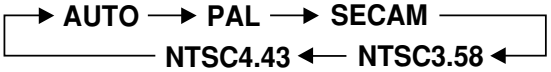
In TV mode (channel 1 to 99 and AV):

< AV-1438 >



< Other models >

In VIDEO mode:



AUTO:
Automatic colour system selection.

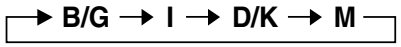
- For the colour systems in each country or region, see the table"Broadcasting systems" on page 22.
- If the picture is not normal in the AUTO mode, change the AUTO mode to another colour system.

SOUND SYSTEM button

If the sound is not clear even when the picture appears normal, change the current sound system to another sound system.

Press this button to select the sound system.

< AV-1438 >



< Other models >

- For the sound systems in each country or region, see the table "Broadcasting systems" on page 22.
- You cannot select any sound system when in a VIDEO mode.

DISPLAY button

You can continuously display the current channel number or VIDEO mode on the screen.

Press this button.

To turn the display off, press this button again.

- When selecting a channel or VIDEO mode with no input signal, indication of selected channel or VIDEO mode becomes fixed on the screen.

RETURN + button

You can set a channel you frequently view to the Return Channel and you can view that channel at any time with one-touch.

To set the channel to the Return Channel:

1 Select the channel you want to set to the Return Channel.

2 Press this button and hold until the message "RETURN PLUS PROGRAMMED!" appears.

- When you turn off the TV, the Return Channel setting is cancelled.

To view the Return Channel:
Press this button.

- You can view two channels (current channel and Return Channel) alternately by pressing this button.

To cancel the Return Channel setting:
Press this button and hold until the message"RETURN PLUS CANCELLED!" appears.

If no channel is set to the Return Channel:
You can view the channel selected right before the current channel by pressing this button.

CHANNEL SCAN button

You can quickly view all TV channels programmes that you can view on your TV, and search for the programme you want to view.

1 Press this button to start scanning TV channels.

The TV channel programmes are each displayed for several seconds.

- The programmes of TV channels for which the SKIP function is set to "YES" are not displayed. (See page 18.)

2 When you find the programme you want to view, press this button again to stop scanning.

MUTING button

You can turn the sound off instantly.

Press this button.

To turn the sound on, press this button again.

OFF TIMER button

You can set the TV to automatically turn off after a set time.

Press this button to select the period of time.

- You can set the period of time to a maximum of 120 minutes in 10 minute increments.
- 1 minute before the OFF TIMER function turns off the TV, "GOOD NIGHT!" appears.

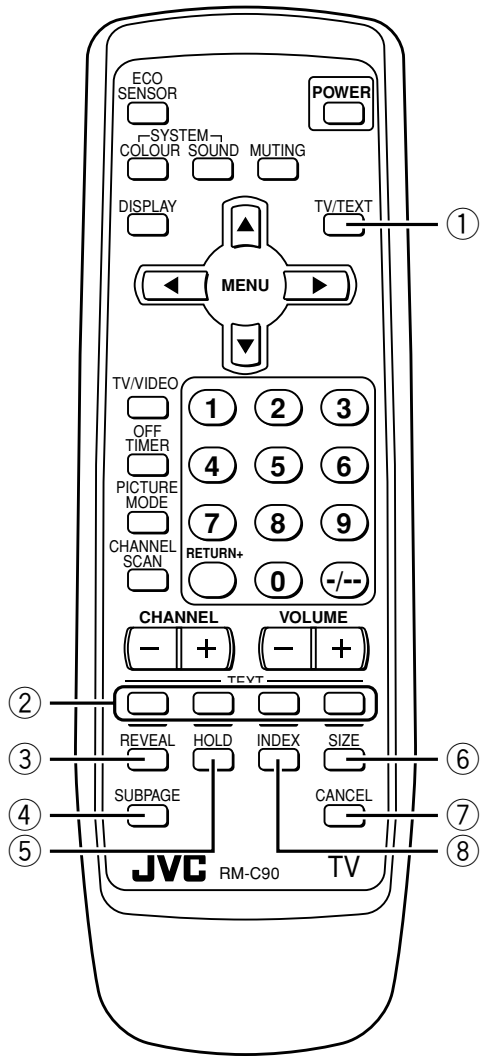
To display the remaining time, press this button once.

To cancel the OFF TIMER function, press this button to set the period of time to 0.

- The OFF TIMER function will not turn off the TV's main power.

Viewing teletext programmes

< AV-21FR3/AV-21LTR3 only >



① TV/TEXT button
② Coloured buttons
③ REVEAL button
④ SUBPAGE button
⑤ HOLD button
⑥ SIZE buttonI
⑦ CANCEL button
⑧ INDEX button

■ Basic operation

1 Select a TV channel with a teletext programme.

2 Press TV/TEXT button to change the TV mode to the teletext mode.

TV mode → TEXT mode (TEXT only)

3 Select a teletext page by pressing the CHANNEL –/+ button, number buttons or coloured buttons.

To return to the TV mode, press the TV/VIDEO button or the TV/TEXT button.

- If you have trouble receiving teletext broadcasts, consult your local dealer or the teletext station.

REVEAL

Some teletext pages include hidden text (such as answers to a quiz).
You can display the hidden text.

Each time you press the REVEAL button, text is hidden or revealed.

HOLD

You can hold a teletext page on the screen for as long as you want, even while several other teletext pages are being received.

Press the HOLD button.

To cancel the HOLD function, press the HOLD button again.

CANCEL

You can watch a TV programme even when in the teletext mode.

1 Press the Number button to enter a page number, or press a coloured button.

The TV starts searching for a teletext page.

2 Press the CANCEL button.

The TV programme appears.

When the TV finds the teletext page, its page number appears in the upper left of the screen.

3 Press the CANCEL button to view the teletext page.

- Pressing the CANCEL button cannot change the teletext mode to the TV mode.

INDEX

You can return to the index page instantly.

Press the INDEX button.

Returns to teletext page 100 or a page which has been specified.

SUBPAGE

Some teletext pages include sub-pages that are automatically displayed.
You can hold any sub-page, or view it at any time.

1 Press the SUBPAGE button to operate the Sub-page function.

2 Press the Number buttons to enter a sub-page number.

Example:

3rd sub-page → press 0, 0, 0 and 3.

- You can also select a sub-page by pressing the red or green button.

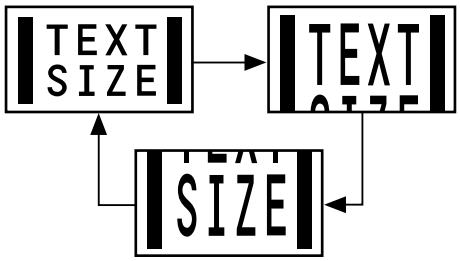
To cancel the Sub-page function, press the SUBPAGE button again.

SIZE

You can double the height of the teletext display.

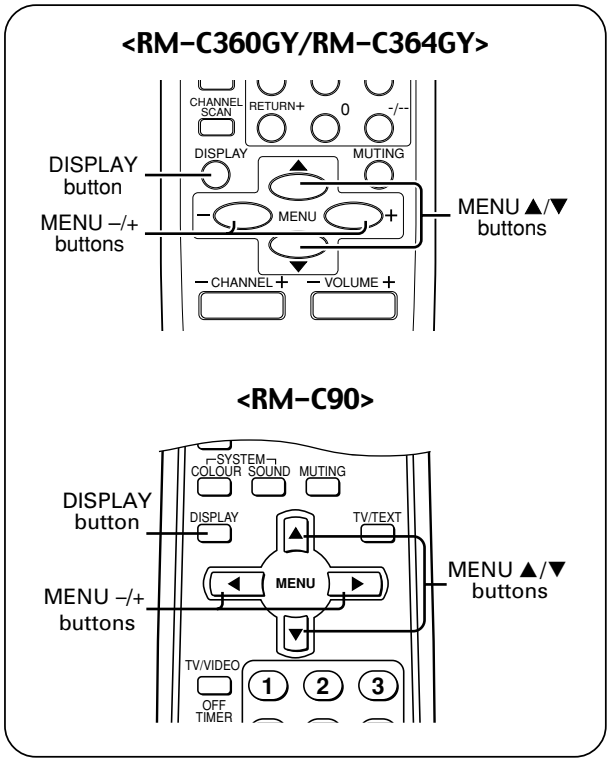
Press the SIZE button.

The teletext display changes cyclically.



Using the TV's menus

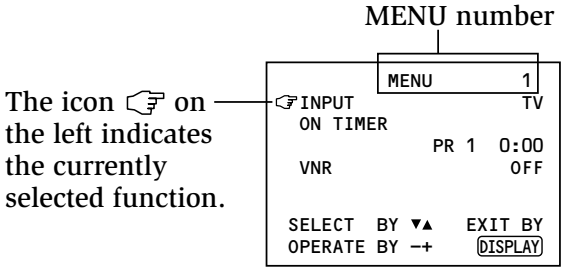
This TV has a number of functions you can operate using the menus. To use all your TV's functions fully, you need to understand how to use the menus.



■ Basic operation

1 Press the MENU ▲/▼ buttons.

One of the 4 menus is displayed.



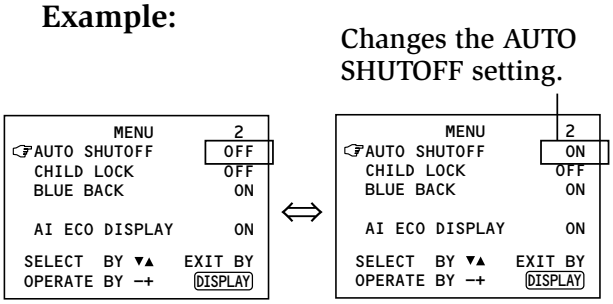
2 Repeatedly press the MENU ▲/▼ buttons to display a desired menu.

- If you hold down the ▼ button, the next menu is displayed.
- If the selected function is on the first line, pressing the ▲ button displays the preceding menu.

3 Repeatedly press the MENU ▲/▼ buttons to select a desired function.

4 Press the MENU –/+ buttons to change function settings.

Example:



- With some functions, the operation method may differ.

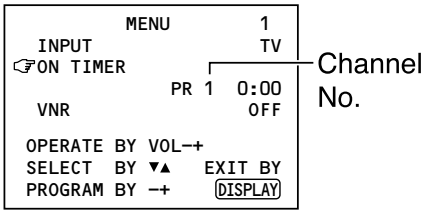
5 Press the DISPLAY button to turn the display off.

- To operate a menu using the buttons on the front panel of the TV, refer to "Operating menus" on page 20.

ON TIMER

Your TV will automatically turn on and tune into the channel you set after the period of time you set.

1 Press MENU ▲/▼ to display the "MENU 1" menu, then select "ON TIMER".



2 Press MENU –/+ to select a channel you want to view when the TV turns on.

3 Press VOLUME –/+ to select the period of time after which you want to turn on the TV.

The ON TIMER function starts.

- Each time you press the button, the period of time changes in 15 minute intervals (up to 12 hours).

To cancel the ON TIMER function, press the VOLUME –/+ button to set the period of time to "0:00".

4 Press DISPLAY to turn the display off.

- If you turn off the TV's main power by pressing the Main power button, the ON TIMER function is canceled.
- If you do not turn off the TV after starting the ON TIMER function, the channel will automatically switch to the channel set for the ON TIMER function.

When the time set for the ON TIMER function is reached:

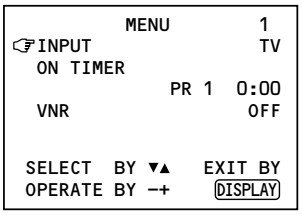
The TV automatically turns on and the channel set for the ON TIMER function is displayed.

- For safety reasons the TV will automatically turn off if no operations are made within approximately two hours after the TV is turned on with the ON TIMER function.
- The OFF TIMER function and AUTO SHUTOFF function have priority over the ON TIMER function.

INPUT

You can view images from VCRs or other devices connected to your TV.

1 Press MENU ▲/▼ to display the "MENU 1" menu, then select "INPUT".



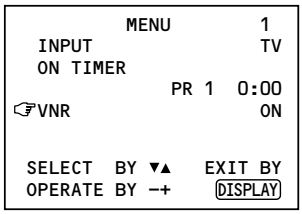
2 Press MENU –/+ to select the VIDEO mode.

TV mode changes to VIDEO mode.

VNR (Video Noise Reduction)

You can reduce the picture noise.

1 Press MENU ▲/▼ to display the "MENU 1" menu, then select "VNR".



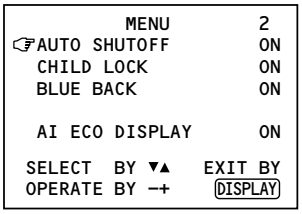
2 Press MENU –/+ to select "ON".

To cancel the VNR function, select "OFF".

AUTO SHUTOFF

You can set your TV to turn off if no signals are received for about 15 minutes or longer after the end of a broadcast.

1 Press MENU ▲/▼ to display the "MENU 2" menu, then select "AUTO SHUTOFF".



2 Press MENU –/+ to select "ON".

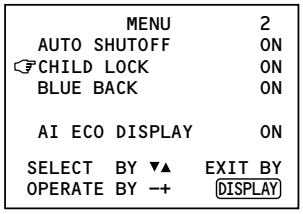
To cancel the AUTO SHUTOFF function, select "OFF".

- The AUTO SHUTOFF function does not turn off the TV's main power.
- The AUTO SHUTOFF will not work for a VIDEO mode.

CHILD LOCK

You can disable the front control buttons of the TV.
When this function is set to "ON", the TV can be operated using only the remote control.
Use this function to prevent children from operating the TV without parental consent.

1 Press MENU ▲/▼ to display the "MENU 2" menu, then select "CHILD LOCK".



2 Press MENU –/+ to select "ON".

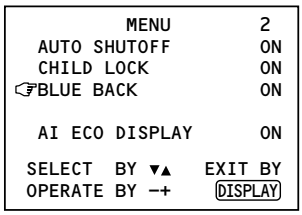
To cancel the CHILD LOCK function, select "OFF".

- The CHILD LOCK function is canceled when you turn the power off.

BLUE BACK

You can mute the sound and change the picture into a blue screen while no signals are received by the TV, or when the signals are unstable.

1 Press MENU ▲/▼ to display the "MENU 2" menu, then select "BLUE BACK".



2 Press MENU –/+ to select "ON".

To cancel the BLUE BACK function, select "OFF".

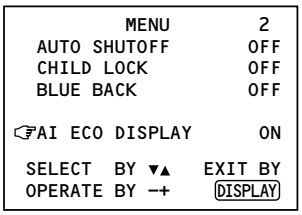
- To view a broadcast even when the reception signal is poor, set the BLUE BACK function to "OFF".
- Even when the BLUE BACK function is set to "OFF", the sound may not be audible.

AI ECO DISPLAY

< AV-14A3 does not have this function >

You can display on the screen the effect of the AI ECO SENSOR function.

1 Press MENU ▲/▼ to display the "MENU 2" menu, then select "AI ECO DISPLAY".



2 Press MENU –/+ to select "ON".

The clover mark indicating the brightness of your room is displayed for several seconds each time the brightness changes. The number of clover marks displayed on screen increases as your room becomes darker.

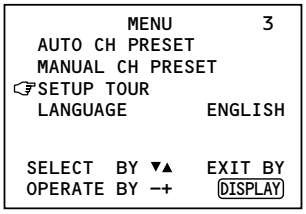
To cancel the AI ECO DISPLAY function, select "OFF".

- To switch the AI ECO SENSOR's mode, see the "ECO SENSOR button" on page 8.

SETUP TOUR

You can start the SETUP TOUR function.

1 Press MENU ▲/▼ to display the "MENU 3" menu, then select "SETUP TOUR".



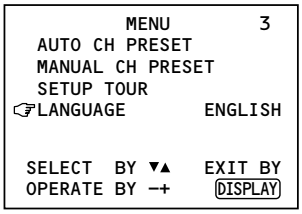
2 Press MENU –/+.

JVC logo is appear and the SETUP TOUR function will start.
For details, see page 6.

LANGUAGE

You can select the language for the on-screen display.

1 Press MENU ▲/▼ to display the "MENU 3" menu, then select "LANGUAGE".



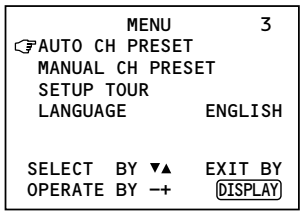
2 Press MENU –/+ to select language.

The on-screen display indications are in the selected language.

AUTO CH PRESET

You can automatically preset all TV channels that can be received by your TV to channels.

1 Press MENU ▲/▼ to display the "MENU 3" menu, then select "AUTO CH PRESET".



2 Press MENU –/+ to start the AUTO CH PRESET function.

"> > > ON SEARCH" is displayed on the screen.

When all the TV channels that can be received on your TV have been preset, the display goes out and the AUTO CH PRESET function operation is completed.

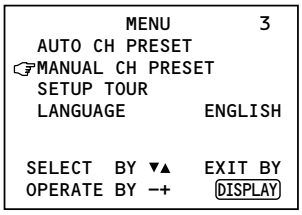
To stop the AUTO CH PRESET:
Press the MENU –/+ buttons.

- The AUTO CH PRESET function does not preset a TV channel to the AV channel (channel number 0).
- If the TV cannot preset the TV channel you want to view, preset it manually. For details, see "MANUAL CH PRESET" on page 17.

MANUAL CH PRESET

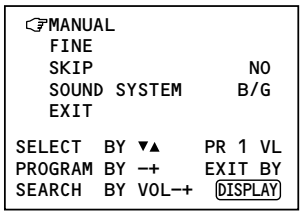
You can manually preset desired TV channels to desired channels.

1 Press MENU ▲/▼ to display the "MENU 3" menu, then select "MANUAL CH PRESET".



2 Press MENU –/+.

The sub-menu is displayed.



- The channel number is displayed as a PR number. For example, channel 1 will be displayed as PR 1. However, the AV channel will be displayed as AV.

3 Press MENU –/+ to select the channel number.

4 Press VOLUME –/+ to start searching for the TV channel.

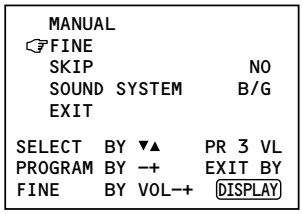
" >>> " or " <<< " is displayed on the screen.

When the TV finds a TV channel, the " >>> " or " <<< " display goes out, and the TV channel is preset to the currently selected channel number.

- If the TV channel you want to preset is not displayed, repeat step 4 until the TV finds the TV channel you want to preset.
- To stop the MANUAL CH PRESET function, press any button other than the VOLUME –/+ button.

If the picture is not clear:
Fine-tune the TV channel.

1 Press MENU ▲/▼ to select "FINE".

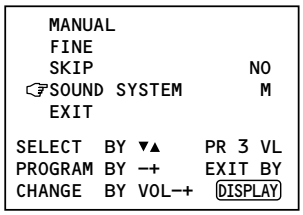


2 Hold VOLUME –/+ down to fine-tune the TV channel so that the best image is displayed on screen.

" > " or " < " indicates that the TV is fine-tuning the TV channel.

If the sound is not clear:

1 Press MENU ▲/▼ to select "SOUND SYSTEM".



2 Press VOLUME –/+ to select the appropriate sound system.

- For the sound systems in each country or region, refer to the table "Broadcasting systems" on page 22.

5 Press MENU ▲/▼ to select "MANUAL".

6 Repeat steps 3 to 5 if you want to preset another TV channel to a channel.

SKIP

You can set undesired channels to be skipped. Channels set to be skipped cannot be selected by the CHANNEL –/+ buttons nor the CHANNEL SCAN button.

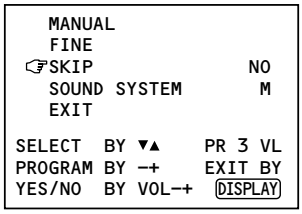
- Channels to which TV channels have not been preset are automatically set to be skipped.

1 Press MENU ▲/▼ to display the "MENU 3" menu, then select "MANUAL CH PRESET".

2 Press MENU –/+.

The sub-menu is displayed.

3 Press MENU ▲/▼ to select "SKIP".



4 Press MENU –/+ to select the channel you want to skip.

5 Press VOLUME –/+ to select "YES".

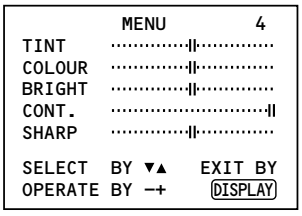
The channel is set to be skipped.
To cancel the SKIP function, select "NO".

6 Repeat steps 4 and 5 if you want to set another channel to skip.

Picture Adjustments

You can adjust the picture as you like.

1 Press MENU ▲/▼ to display the "MENU 4" menu.



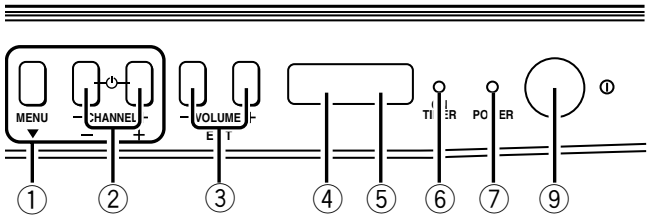
2 Press MENU ▲/▼ to select an item and press MENU –/+ to adjust it.

TINT*	- : Reddish	+ : Greenish
COLOUR	- : Lighter	+ : Deeper
BRIGHT	- : Darker	+ : Brighter
CONT.	- : Lower	+ : Higher
SHARP	- : Softer	+ : Sharper

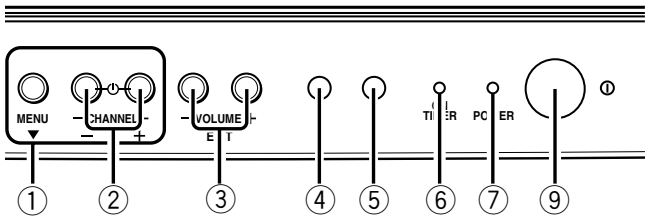
* TINT (tint) is displayed only when viewing images from NTSC3.58 or NTSC4.43 colour systems.

Using the buttons on the TV

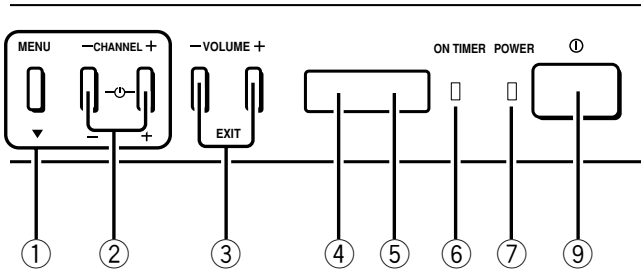
<AV-21D3/AV-21LT3/AV-21LTR3>



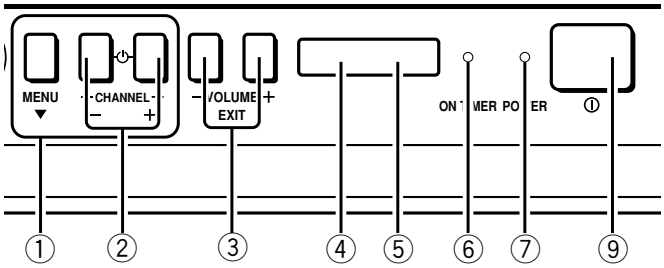
<AV-21Q3>



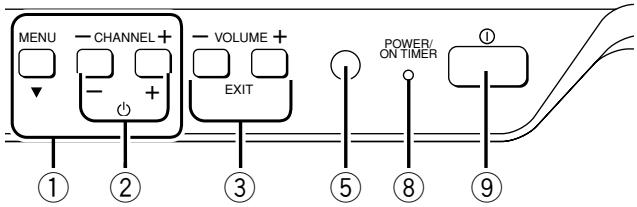
<AV-21E3>



<AV-14F3/AV-1435/AV-1438/AV-20N3/AV-21F3/AV-21FR3>



<AV-14A3>



① MENU buttons
- MENU ▼ button
- MENU –/+ buttons

② CHANNEL –/+ buttons
③ VOLUME –/+ buttons
④ AI ECO sensor
⑤ Remote control sensor
⑥ ON TIMER lamp
The light is switched on while ON TIMER function is operating.
⑦ POWER lamp
When the Main power is on, the light is red.
⑧ POWER/ON TIMER lamp
When the Main power is on, the light is green.
When ON TIMER function is on, it is red.
⑨ Main power button

Basic operation

• Check to make sure the CHILD LOCK function is set to “OFF”. When the CHILD LOCK function is set to “ON”, the TV cannot be operated using the front control buttons. For details, see “CHILD LOCK” on page 14.

1 Press CHANNEL –/+ to turn the TV on from standby mode.

2 Press CHANNEL –/+ to select a channel.

3 Press VOLUME –/+ to adjust the volume.

4 To turn your TV off, press the Main power button to turn off the TV’s main power.

To change the TV mode to the VIDEO mode:

• Select the VIDEO mode with the INPUT function in “MENU 1”.

Operating menus

You can operate functions in menus using the front control buttons on the TV.

1 Press MENU ▼ to display a menu.

2 Press MENU ▼ repeatedly to display the menu you want to use.

3 Press MENU ▼ to select the desired function or item.

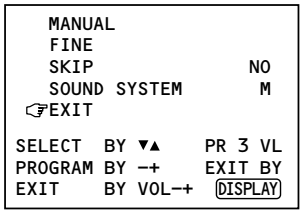
4 Press MENU –/+ or VOLUME –/+ to carry out the desired operation.

For details, see the description for each function.

5 Press VOLUME –/+ to turn the menu display off.

To turn the sub-menu display off:

1 Press MENU ▼ to select “EXIT”.



2 Press VOLUME –/+ to turn the display off.

Troubleshooting

If there is no picture or the TV does not operate normally, make sure the problem isn't due to the reasons indicated below.
If the problem persists even after taking the measures indicated, please contact a service technician.

Cannot turn the TV on

- Press the Main power button on the TV.
- Connect the power cord to the AC outlet.

The screen turns blue

- Is the BLUE BACK function on? (see page 15.)

Remote control inoperable

- Replace the batteries. (see page 3.)

Buttons on front of the TV do not work

- Switch the CHILD LOCK function off. (see page 14.)

TV does not respond immediately

- Press the main power button on the TV to turn off the main power. Press the main power button again to turn on the TV. If the TV returns to a normal state, operation is normal.

The TV turns off suddenly

- Is the OFF TIMER function set to operate? (see page 9.)
- Is the AUTO SHUTOFF function on? (see page 14.)
- Have you not performed an operation for about two hours after the TV was switched on by the ON TIMER function? (see page 13.) If you don't perform an operation within about two hours, the TV is automatically switched off for safety.

Poor sound

- Press the SOUND SYSTEM button to select another sound system. (see page 8.)

Poor picture

- Press the COLOUR SYSTEM button to select another colour system. (see page 8.)
- Adjust the picture settings. (see page 18.)
- Set the Picture mode to STANDARD. (see page 8.)
- If noise (snow) totally blocks out the picture, check the following.
  - Have the TV and aerial been connected properly?
  - Has the aerial cable been damaged?
  - Is the aerial pointing in the right direction?
  - Is the aerial itself faulty?
- If the TV or aerial suffer interference from other equipment, stripes or noise may appear in the picture. Move any equipment which can cause interference away from the TV.
- If the TV or aerial suffer interference from signals reflecting from mountains or buildings, double-pictures (ghosting) will occur. Change the aerial's direction or replace it with an aerial with better directionality.
- When a white and bright still image (such as a white dress) is displayed on the screen, the white part may look as if it is coloured. When the image disappears from the screen, the unnatural colours will also disappear.

The TV turns on suddenly

- Is the ON TIMER function set to operate? (see page 13.)

The TV channel changes suddenly

- Is the ON TIMER function set to operate? (see page 13.)

No receivable teletext programme

< AV-21FR3/AV-21LTR3 only >

- Select a channel with teletext information. You cannot watch teletext recorded on a video tape.

Specifications

TV RF systems

AV-1438: B, G, I, D, K, K1, M
Other models: B, G, I, D, K, K1

Colour systems

AV-1438: PAL, SECAM, NTSC 3.58 MHz/NTSC 4.43 MHz
Other models: PAL, SECAM, NTSC 3.58 MHz/NTSC 4.43 MHz (in VIDEO mode only)

Receiving channels

VHF low channel (VL), VHF high channel (VH), UHF channel (U)
Receives cable channels in mid band, super band and hyper band.

External input / output

INPUT: VIDEO input (RCA), AUDIO input (RCA)
OUTPUT: VIDEO output (RCA), AUDIO output (RCA)
Headphone jack: stereo mini jack (3.5 mm diameter)

Teletext system (AV-21FR3/AV-21LTR3 only)

FLOF (Fastext), WST (World Standard Text)

Language displayed by teletext (AV-21FR3/AV-21LTR3 only)

English, Lithuanian, Russian, Czechoslovakian, Ukrainian, Latvian, Romanian, Hungarian

Accessories

- Remote control unit: AV-21FR3/AV-21LTR3; RM-C90
  AV-14A3; RM-C360GY
  Other models; RM-C364GY
- AA / R6 / UM-3 dry cell battery × 2
- Rod aerial × 1 (AV-14A3/AV-14F3/AV-1435/AV-1438 only)

Design and specifications subject to change without notice.

Broadcasting systems

Area	Country or Region	System	
		Colour	Sound
Asia, Middle East	Bahrain, Kuwait, Oman, Qatar, United Arab Emirates, Yemen, etc. Indonesia, Malaysia, Singapore, Thailand, India, etc.	PAL	B/G
	China, Vietnam, etc.	PAL	D/K
	Hong Kong, etc.	PAL	I
	Islamic Republic of Iran, Lebanon, Saudi Arabia, etc.	SECAM	B/G
	Philipins, Taiwan, Myanmar, etc.	NTSC	M
Europe	Russia, etc.	SECAM	D/K
	Czech Republic, Poland, etc.	PAL	D/K
	Germany, Holland, Belgium, etc.	PAL	B/G
	UK, etc.	PAL	I
Oceania	Australia, New Zealand, etc.	PAL	B/G
Africa	Republic of South Africa, etc.	PAL	I
	Nigeria, etc.	PAL	B/G
	Egypt, Morocco, etc.	SECAM	B/G